RM-E700

SERVICE MANUAL

AEP Model
UK Model

SPECIFICATIONS

Video input	Phono jack (1) 1 Vp-p, 75 ohms, unbalanced, sync negative
S video input	4-pin mini-DIN (1) Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.300 Vp-p 75 ohms, unbalanced
Video output	Phono jack (1) 1 Vp-p, 75 ohms, unbalanced, sync negative
S video output	4-pin mini-DIN (1) Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.300 Vp-p 75 ohms, unbalanced
Audio input	Phono jacks (2)
Audio output	Phono jacks (2)
LANC connector for the player	Stereo mini-minijack (1)
LANC connector for the recorder	Stereo mini-minijack (1)
CONTROL S connector for the recorder	Minijack (1)
GPI output	Minijack (1)

General

Power requirement	6 V DC IN
Power consumption	5 W
Dimensions	Approx. 355 × 80 × 230 mm (w/h/d) (14 × $3\frac{1}{4}$ × $9\frac{1}{8}$ inches)
Weight	Approx. 1.5 kg (3 lb 5 oz)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

VIDEO EDITING CONTROLLER/TITLER

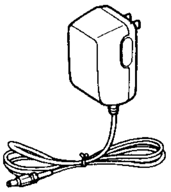
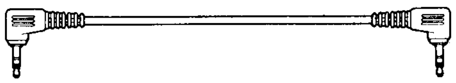
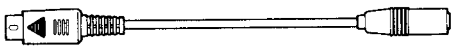
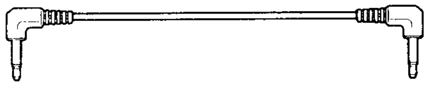
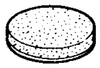
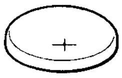
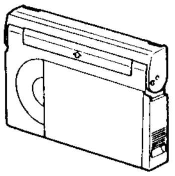
MICROFILM

SONY®

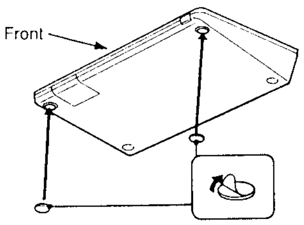
Supplied Accessories

Before using this unit, make sure that you have all the supplied accessories in your package.

For details on the use of each item, refer to the pages indicated in the circle ●.

AC power adaptor AC-D4L (1) ⑩~⑰ 	CONTROL L, REMOTE, or LANC ⓛ connecting cables (L shaped stereo mini-miniplug ↔ L shaped stereo mini-miniplug) (2) ⑩~⑰ 
CONTROL L cable adaptor (stereo mini-minijack ↔ 5-pin plug) (2) ⑧ 	CONTROL S/GPI OUT connecting cables (L shaped miniplug ↔ L shaped miniplug) (2) ⑫~⑬ 
Spacers (2) 	Lithium batteries CR2025 (2) ⑥ 
Demonstration tape (1) 	Brochure: How to use the "Timing Adjustment" section of the Demonstration Tape

How to use the supplied spacers
Use the spacers as the stoppers. Attach the spacers to the front rubber feet as illustrated.



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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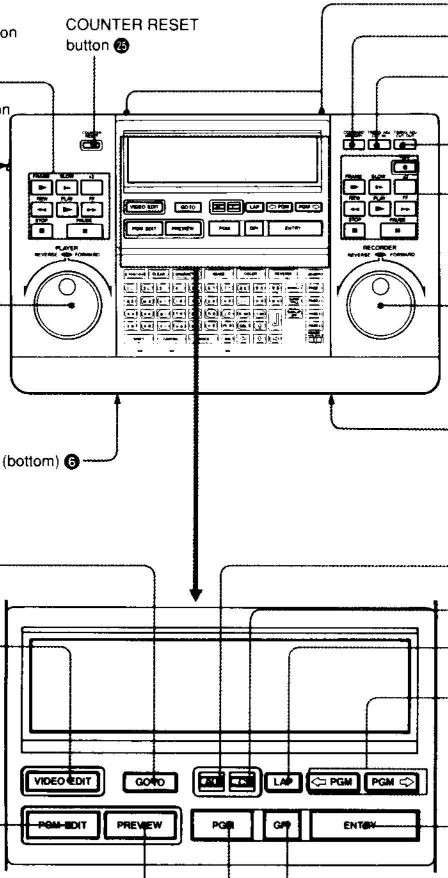
Parts Identification

For details on the use of each control, refer to the pages indicated in the circle ●.

Front panel

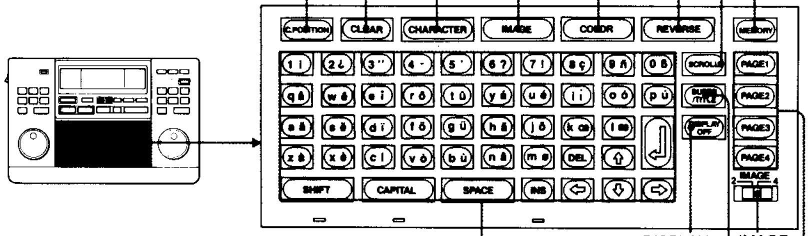


PLAYER tape transport buttons ㉓
⏯ FRAME button
▶ SLOW (1/5 speed) button
X2 (double speed) button
◀◀ REW (rewind) button
▶ **PLAY** button
▶▶ **FF** (fast-forward) button
■ **STOP** button
‖ **PAUSE** button
POWER switch ㉒
COUNTER RESET button ㉕
PLAYER jog/shuttle dial ㉖
Lithium battery compartment (bottom) ⑥
Infrared beam emitter to control the recorder ⑭~⑰
COMMAND MEMORY button ⑱
TIMING ADJ (adjust) CUT IN button
TIMING ADJ (adjust) CUT OUT button
RECORDER tape transport buttons ㉔
The functions except the ● REC (recording) buttons are the same as those of the PLAYER tape transport buttons
RECORDER jog/shuttle dial ㉖
Infrared beam detector ⑱

Buttons for editing

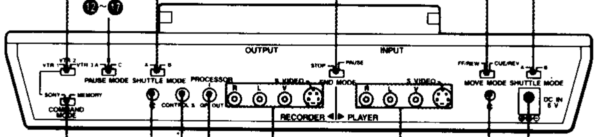
GOTO button ㉗
VIDEO EDIT (quick editing) button ㉛
PGM EDIT (program editing) button ㉔
PREVIEW button ㉔
PGM (program) button ㉒
AC (all clear) button ㉘
C (clear) button ㉙
LAP button ㉕
⇦ PGM/PGM ⇨ buttons ㉗
ENTRY button ㉓
GPI (General Purpose Interface) button
Press this button to emit the GPI signal from the GPI OUT jack at the rear. The GPI signal is the "go" sign for the peripheral equipment of the video equipment.

Title keyboard



C (character) POSITION button ㊲
CHARACTER button ㉟
COLOR button ㊱ ㊵
SCROLL button ㊺
CLEAR button ㊷
IMAGE button ㊴
REVERSE button ㊵
MEMORY button ㊴
DISPLAY OFF button ㊲ ㊵
IMAGE 2/4 selector ㊳
SUPER/TITLE button ㊸ ㊹
PAGE 1, 2, 3, and 4 buttons ㉟ ㊴
Typing keyboard ㉞

Rear panel



COMMAND MODE VTR1/VTR2/VTR3 selector ⑫~⑰
SHUTTLE MODE A/B selector for the recorder ㉖
PAUSE MODE selector ⑫~⑰
END MODE selector ㉕
MOVE MODE selector ㉕
SHUTTLE MODE A/B selector for the player ㉖
⯊ jack for the recorder (stereo mini-minijack)
RECORDER OUTPUT jacks ⑩~⑰
Same jacks as the PLAYER INPUT jacks are provided.
DC IN 6V jack ⑩~⑰
⯊ jack for the player (stereo mini-minijack) ⑩~⑰
CONTROL S output jack (minijack) ⑫~⑬
COMMAND MODE SONY/MEMORY selector ⑫~⑰
GPI OUT jack (minijack)
PLAYER INPUT jacks ⑩~⑰
R and L jacks (phono type) for audio connection
V jack (phono type) for video connection
S jack (4-pin mini DIN) for S video connection

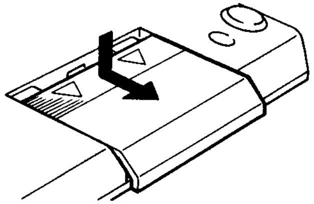
Inserting the Lithium Batteries

This unit uses two lithium batteries to keep the data for program editing, the data for timing adjustment, and the stored remote control signal of other manufacturer's video equipment.
The lithium battery compartment is located at the bottom.

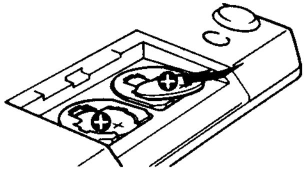
How to insert

In step 4, make sure that the AC power adaptor is connected before turning on the power. Otherwise, the lithium battery will be consumed quickly.

1 **Open the cover of the lithium battery compartment.**



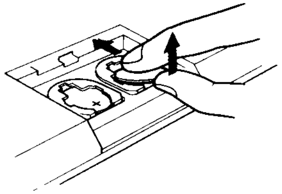
2 **Insert the supplied two CR2025 lithium batteries with correct polarity.**



3 **Close the cover.**

4 **Connect the supplied AC power adaptor to the DC IN 6V jack at the rear, and turn on the POWER switch.**
Check that the 🪫 mark does not appear in the display window.

To remove the lithium batteries
Press the side of the battery in the direction indicated for installation.



Lithium battery life
Approximately 1 year in normal operation.
When the lithium batteries become weak, the 🪫 mark will light in the display window. **When this happens, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.**

Note
To keep the data, replace the lithium batteries with the AC power adaptor connected. If you replace the lithium batteries when the AC power adaptor is not connected, the data will be erased. Also, when the lithium batteries are completely discharged, the data will be erased. In this case, store them again.

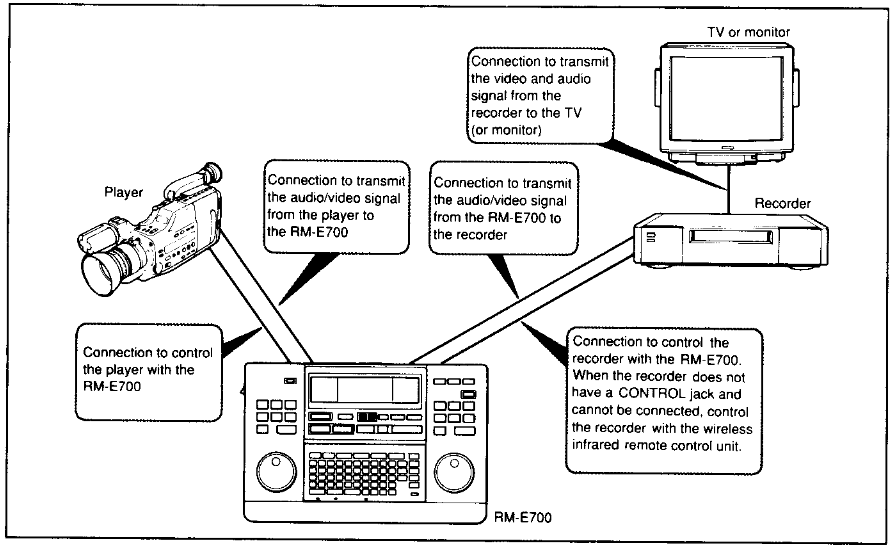
Notes on lithium battery
- Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.

WARNING
Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.

Step 1 Connection

Before You Connect

To use the RM-E700, connect the RM-E700 with the player, recorder and TV (or monitor) as follows.


TV or monitor
Player
Recorder
RM-E700

Connection to transmit the video and audio signal from the recorder to the TV (or monitor)

Connection to transmit the audio/video signal from the player to the RM-E700

Connection to transmit the audio/video signal from the RM-E700 to the recorder

Connection to control the player with the RM-E700

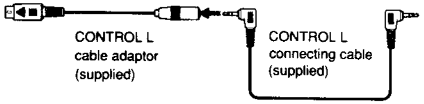
Connection to control the recorder with the RM-E700. When the recorder does not have a CONTROL jack and cannot be connected, control the recorder with the wireless infrared remote control unit.

Notes on Connection

- **Be sure to turn off the power of the RM-E700, player, recorder and TV (or monitor) before connection.**
- Be sure to supply the power to the recorder and the player from a wall outlet using an AC power adaptor. Do not use the battery pack for the power source as they may run out during editing.

Note on the supplied cable adaptors for the CONTROL L jack

When the CONTROL L, REMOTE, or LANC 🅛 jack is a 5-pin (🅟) type, use the supplied cable adaptor.


CONTROL L
cable adaptor
(supplied)
CONTROL L
connecting cable
(supplied)

Notes on the connection of the player and the recorder

- Connect the red plug to the audio right jack (red) and the white plug to the audio left jack (white).
- Connect the yellow plug to the video jack (yellow).
- When the player or the recorder is a monaural type, use a monaural A/V connecting cable such as VMC-910MS/920MS (phono plug × 2 ↔ phono plug × 3).
- When both the player and the recorder have the S video jacks, we recommend connecting the S video jacks.
- The signal input to the S video jack is output only from the S video jack. The signal input to the video jack is output only from the video jack. The RM-E700 does not convert the S video signal into the composite video signal or vice versa.

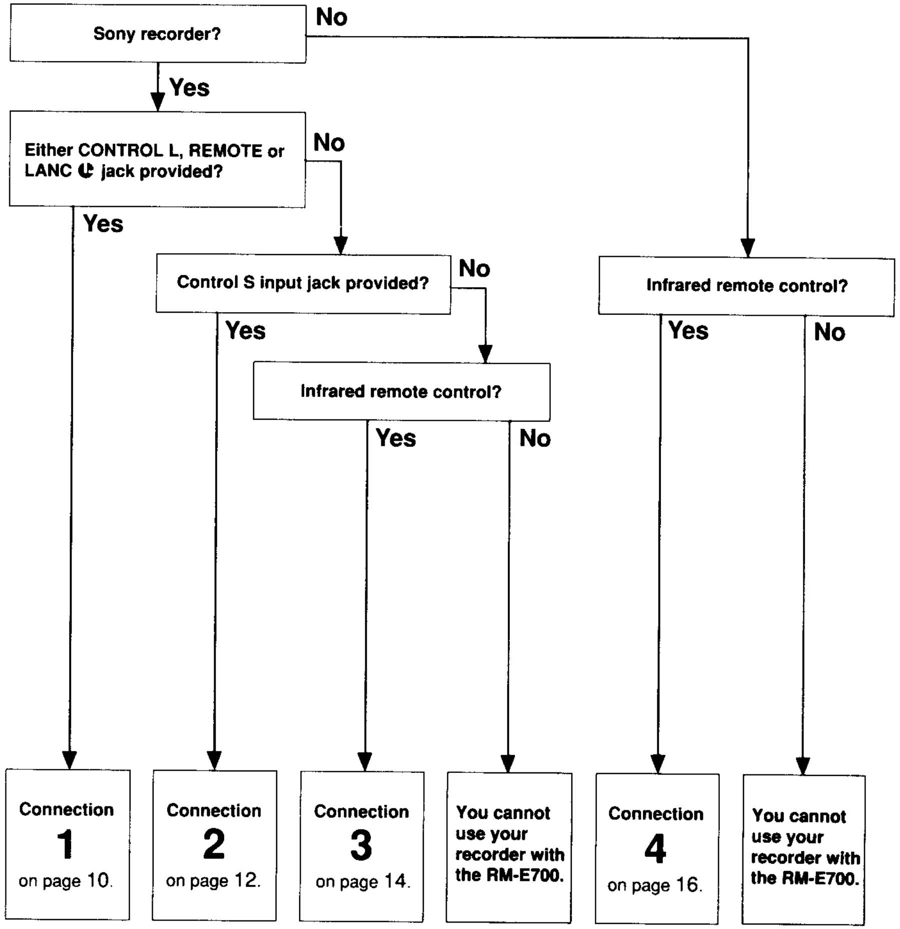
See page 54 for the optional connecting cables.

Finding Out Your Connection

There are 4 ways of connection according to the recorder. Follow the flowchart below to find out the connection for your recorder, then go to the appropriate page. How to connect the RM-E700 with the player, recorder and TV (or monitor) of your case is explained on that page.

Which is the Connection for Your Recorder?

Start here.

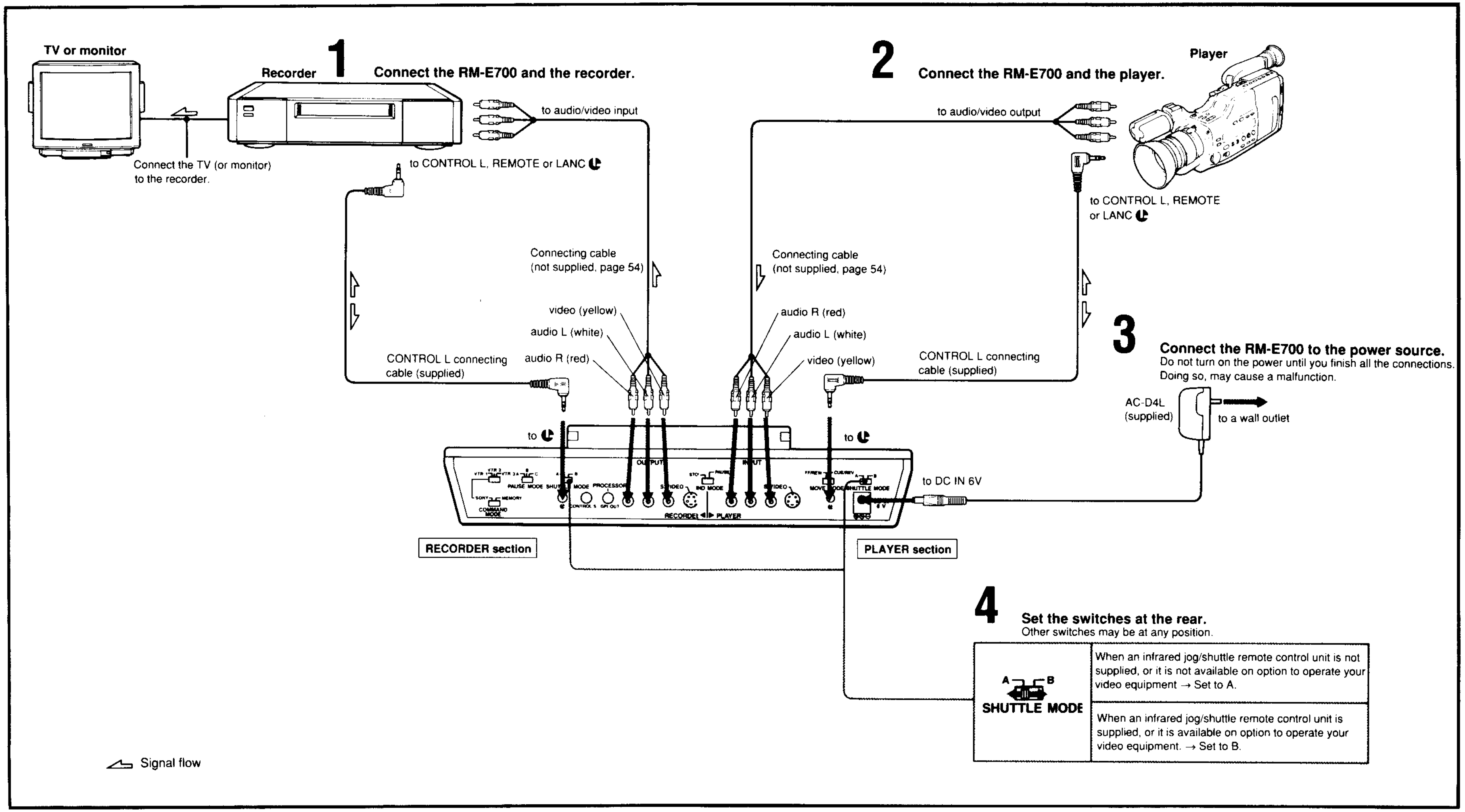

Sony recorder?
No
Yes
Either CONTROL L, REMOTE or LANC 🅛 jack provided?
No
Yes
Control S input jack provided?
No
Yes
Infrared remote control?
Yes
No
Infrared remote control?
Yes
No
Connection 1 on page 10.
Connection 2 on page 12.
Connection 3 on page 14.
You cannot use your recorder with the RM-E700.
Connection 4 on page 16.
You cannot use your recorder with the RM-E700.

Connection 1

Use this connection when you have a Sony recorder with either CONTROL L, REMOTE, or LANC ⓛ jack. After connection, set the switches at the rear of the RM-E700.

Note on models SLV-50, SLV-70HF, SLV-401 and SLV-402VPS

When you use the above model for the recorder, the editing is not possible with the CONTROL L or LANC ⓛ connection. To edit, use the Connection 2 (Control S connection).


TV or monitor
Recorder
to audio/video input
Connect the TV (or monitor) to the recorder.
to CONTROL L, REMOTE or LANC ⓛ
Connecting cable (not supplied, page 54)
video (yellow)
audio L (white)
audio R (red)
CONTROL L connecting cable (supplied)
to ⓛ
Player
to audio/video output
to CONTROL L, REMOTE or LANC ⓛ
Connecting cable (not supplied, page 54)
audio R (red)
audio L (white)
video (yellow)
CONTROL L connecting cable (supplied)
to ⓛ
OUTPUT
INPUT
RECORDER ◁▷ PLAYER
to DC IN 6V
AC-D4L (supplied)
to a wall outlet
RECORDER section
PLAYER section
Signal flow

1 **Connect the RM-E700 and the recorder.**

2 **Connect the RM-E700 and the player.**

3 **Connect the RM-E700 to the power source.**

Do not turn on the power until you finish all the connections. Doing so, may cause a malfunction.

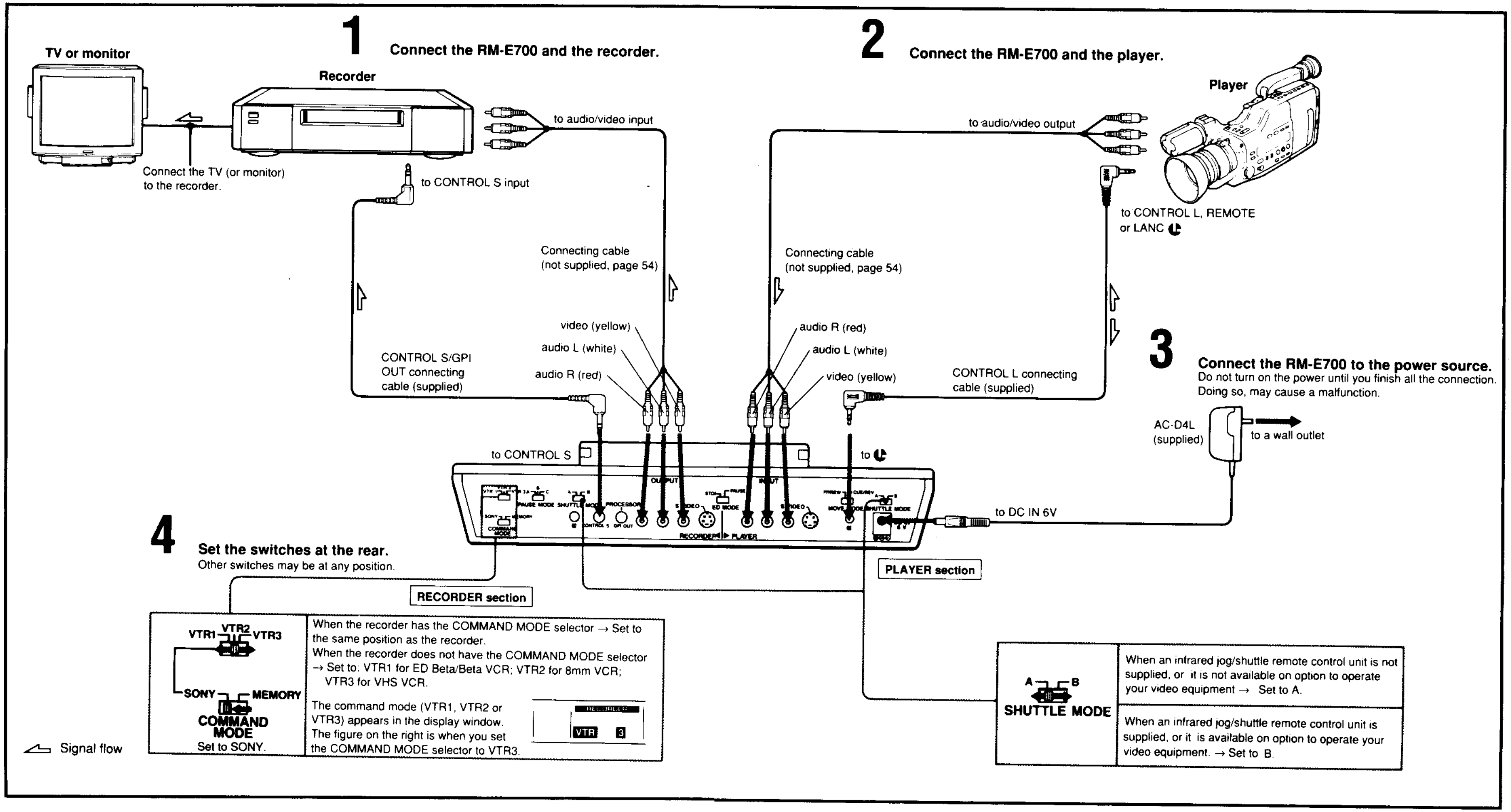
4 **Set the switches at the rear.**

Other switches may be at any position.

A B **SHUTTLE MODE**	When an infrared jog/shuttle remote control unit is not supplied, or it is not available on option to operate your video equipment → Set to A.
	When an infrared jog/shuttle remote control unit is supplied, or it is available on option to operate your video equipment. → Set to B.

Connection 2

Use this connection when you have a Sony recorder with the CONTROL S input jack only. After connection, set the switches at the rear of the RM-E700. When your recorder has the CONTROL S input jack and a CONTROL L, REMOTE, or LANC ⓛ jack, we recommend using "Connection 1".



1 Connect the RM-E700 and the recorder.

2 Connect the RM-E700 and the player.

3 Connect the RM-E700 to the power source.
Do not turn on the power until you finish all the connection. Doing so, may cause a malfunction.

4 Set the switches at the rear.
Other switches may be at any position.

TV or monitor
Recorder
Player
Connect the TV (or monitor) to the recorder.
to audio/video input
to CONTROL S input
to audio/video output
to CONTROL L, REMOTE or LANC ⓛ
Connecting cable (not supplied, page 54)
Connecting cable (not supplied, page 54)
video (yellow)
audio L (white)
audio R (red)
audio R (red)
audio L (white)
video (yellow)
CONTROL S/GPI OUT connecting cable (supplied)
CONTROL L connecting cable (supplied)
to CONTROL S
to ⓛ
OUTPUT
INPUT
to DC IN 6V
AC-D4L (supplied)
to a wall outlet
RECORDER section
PLAYER section
Signal flow

RECORDER section

VTR1 VTR2 VTR3 SONY MEMORY COMMAND MODE Set to SONY.	When the recorder has the COMMAND MODE selector → Set to the same position as the recorder. When the recorder does not have the COMMAND MODE selector → Set to: VTR1 for ED Beta/Beta VCR; VTR2 for 8mm VCR; VTR3 for VHS VCR. The command mode (VTR1, VTR2 or VTR3) appears in the display window. The figure on the right is when you set the COMMAND MODE selector to VTR3.

RECORDER
VTR 3

PLAYER section

A B SHUTTLE MODE	When an infrared jog/shuttle remote control unit is not supplied, or it is not available on option to operate your video equipment → Set to A.
	When an infrared jog/shuttle remote control unit is supplied, or it is available on option to operate your video equipment. → Set to B.

Connection 3

Use this connection when you have a Sony recorder with the infrared remote control unit, but without the CONTROL L, REMOTE, LANC Ⓛ, or CONTROL S input jack. Control the recorder by transmitting the infrared signal from the RM-E700 to the infrared beam detector of the recorder. After connection, set the switches at the rear of the RM-E700.

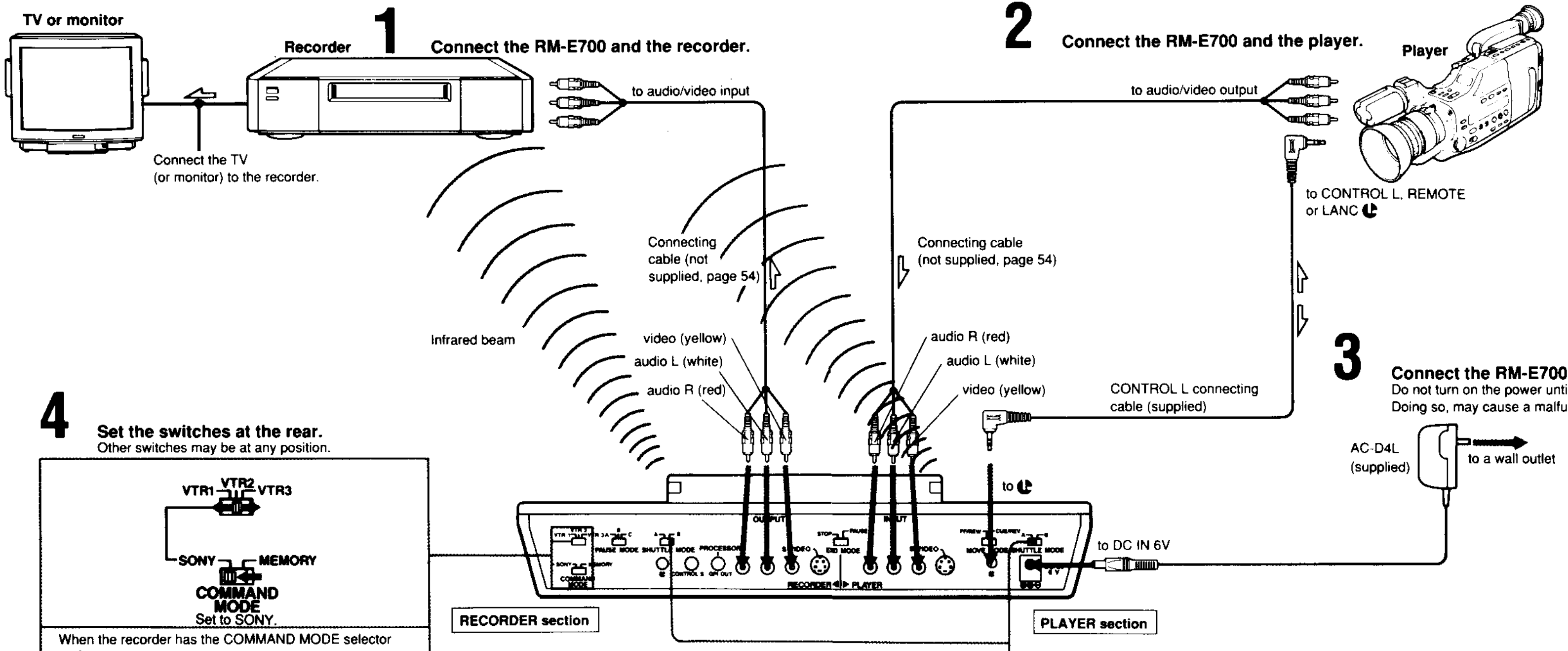
Caution

When the player is a video camera recorder or a video cassette recorder controlled by an infrared remote control unit, the player may detect the control signal from the RM-E700 to the recorder, resulting in faulty operation. (At worst, the recorded contents in the tape may be erased.*)

* To protect the recorded contents, set the safety tab to prevent recording or break off the tab.

When the player has the infrared beam detector:
- Set the command mode selector on the player to OFF, or to a different position from that of the recorder.

Or,
- When the player does not have the command mode selector, cover its infrared beam detector with thick black paper.


TV or monitor
Recorder
Connect the TV (or monitor) to the recorder.
to audio/video input
Connecting cable (not supplied, page 54)
Infrared beam
video (yellow)
audio L (white)
audio R (red)
to audio/video output
Player
to CONTROL L, REMOTE or LANC Ⓛ
Connecting cable (not supplied, page 54)
audio R (red)
audio L (white)
video (yellow)
CONTROL L connecting cable (supplied)
to Ⓛ
to DC IN 6V
AC-D4L (supplied)
to a wall outlet
OUTPUT
INPUT
VTR 1
VTR 2
VTR 3
SONY
MEMORY
COMMAND MODE
PAUSE MODE
SHUTTLE MODE
PROCESSOR
CONTROL S
S VIDEO
STOP
PAUSE
EDIT MODE
RECORDER
PLAYER
MOVE MODE
6 V
RECORDER section
PLAYER section

1 **Connect the RM-E700 and the recorder.**

2 **Connect the RM-E700 and the player.**

3 **Connect the RM-E700 to the power source.**
Do not turn on the power until you finish all the connections. Doing so, may cause a malfunction.

4 **Set the switches at the rear.**
Other switches may be at any position.

VTR1 VTR2 VTR3
SONY MEMORY
COMMAND MODE
Set to SONY.

When the recorder has the COMMAND MODE selector → Set to the same position as the recorder.
When the recorder does not have the COMMAND MODE selector → Set to: VTR1 for ED Beta/Beta VCR; VTR2 for 8mm VCR; VTR3 for VHS VCR.

The command mode (VTR1, VTR2 of VTR3) appears in the display window.
The figure on the right is when you set the COMMAND MODE selector to VTR3.

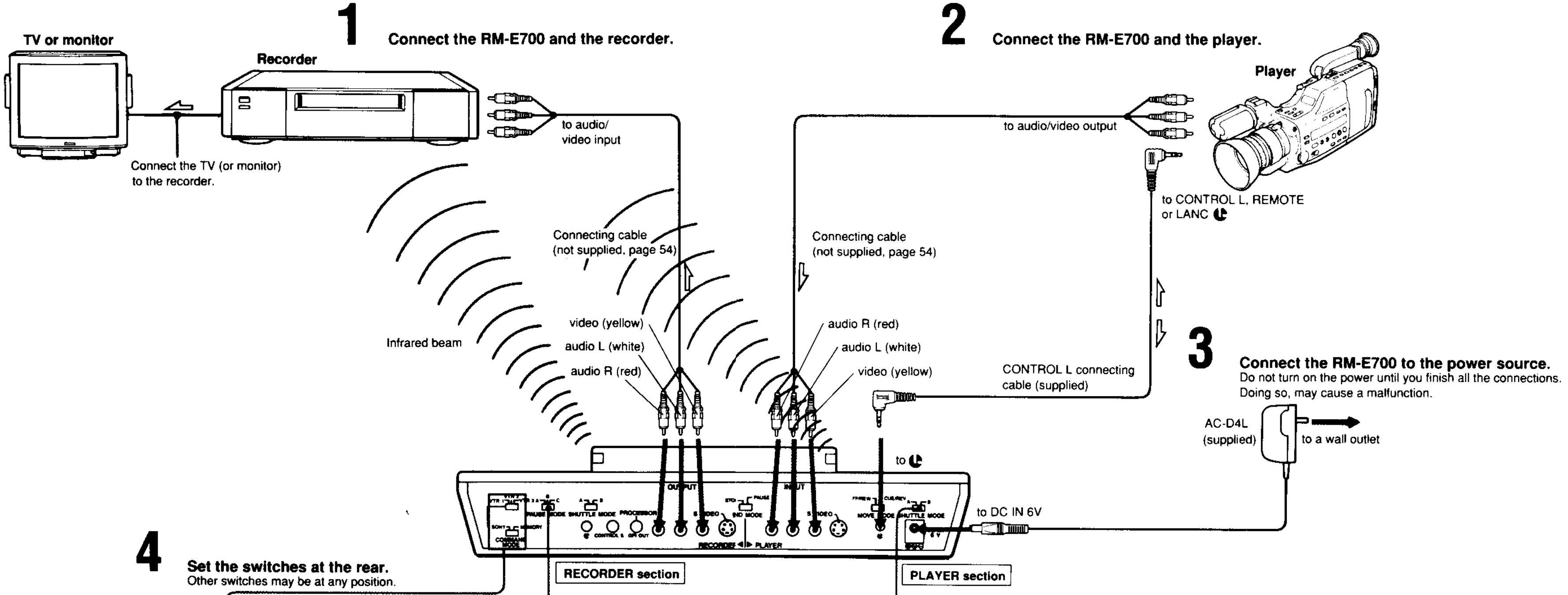
Note
The RM-E700 cannot control the tape transport functions which the recorder does not have, even though the RM-E700 has those transport buttons.

A B **SHUTTLE MODE**	When an infrared jog/shuttle remote control unit is not supplied, or it is not available on option to operate your video equipment → Set to A.
	When an infrared jog/shuttle remote control unit is supplied, or it is available on option to operate your video equipment → Set to B.

△ Signal flow

Connection 4

Use this connection when you have another manufacturer's recorder with an infrared remote control unit. After connection, set the switches at the rear of the RM-E700, and then store the tape transport functions of the recorder's remote control unit. For the store operation, see page 18.


TV or monitor
Recorder
to audio/ video input
Connect the TV (or monitor) to the recorder.
Infrared beam
Connecting cable (not supplied, page 54)
video (yellow)
audio L (white)
audio R (red)
Connecting cable (not supplied, page 54)
audio R (red)
audio L (white)
video (yellow)
Player
to audio/video output
to CONTROL L, REMOTE or LANC
CONTROL L connecting cable (supplied)
to
AC-D4L (supplied)
to a wall outlet
to DC IN 6V
OUTPUT
INPUT
RECORDER section
PLAYER section

1 **Connect the RM-E700 and the recorder.**

2 **Connect the RM-E700 and the player.**

3 **Connect the RM-E700 to the power source.**
Do not turn on the power until you finish all the connections. Doing so, may cause a malfunction.

4 **Set the switches at the rear.**
Other switches may be at any position.

VTR1 VTR2 VTR3
Any position
SONY MEMORY
COMMAND MODE
Set to MEMORY.

A B C **PAUSE MODE**	To release the pause mode of the recorder: by pressing the pause button → Set to A. by pressing the play button → Set to B. by pressing the record button → Set to C.

A B **SHUTTLE MODE**	When an infrared jog/shuttle remote control unit is not supplied, or it is not available on option to operate your video equipment → Set to A.
	When an infrared jog/shuttle remote control unit is supplied, or it is available on option to operate your video equipment → Set to B.

You cannot use the jog/shuttle dial of the RECORDER section to operate a video quipment of other manufacturers.

◁ Signal flow

Continued on next page

Storing the Functions of the Remote Control Unit in the RM-E700

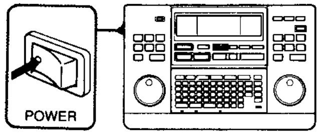
When you use an other manufacturer's recorder, store the control signal of the tape transport, so that the RM-E700 can operate the recorder.
However, you cannot use the jog/shuttle dial to operate the recorder.

To avoid mistakes in editing, store at least the following six functions of the remote control unit on the same button of the RM-E700.
▶ (playback), REC (recording), STOP, ❚❚ (pause), ▶▶ (fast-forward), ◀◀ (rewind)

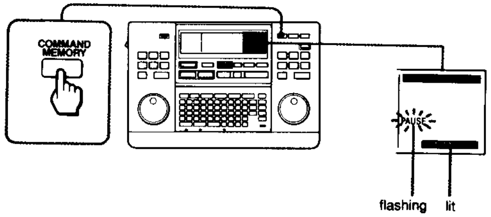
Operation

Point the remote control unit of the recorder at the infrared beam detector of the RM-E700.

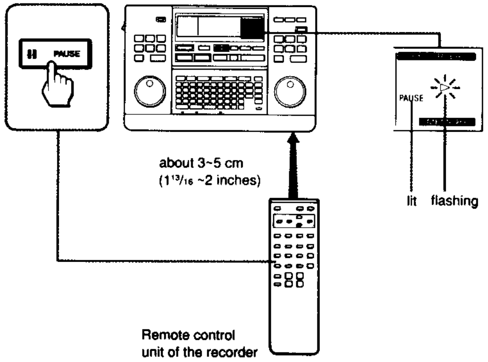
1 **Turn on the power of the RM-E700.**



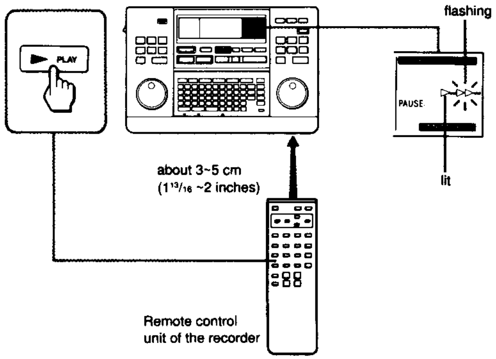
2 **Press the COMMAND MEMORY button.**
The RM-E700 enters the learning mode.
The MEMORY indication lights up, and the PAUSE indication flashes in the display window.



3 **While PAUSE is flashing, keep pressing the ❚❚ button of the remote control unit of the recorder. When PAUSE lights up, release the ❚❚ button.**
The RM-E700 has learned the pause function. Then ▷ (playback) flashes.



4 **While ▷ is flashing, keep pressing the ▶ button of the remote control unit of the recorder. When ▷ lights up, release the ▶ button.**
The RM-E700 has learned the playback function. Then ▷▷ (fast-forward) flashes.



5 **Repeat step 3 or 4 to store the functions of other buttons.**
The indicator flashes in the order of:
▷▷ (fast-forward) → ◁◁ (rewind) → STOP → REC (recording) → ❚❚❚▷ (frame advance playback) → ❚▷ (slow speed playback) → ×2 (double speed playback)
When the RM-E700 has learned all the functions, the learning mode is cancelled after 3 seconds.

6 **Check that the recorder operates correctly by pressing the buttons of the RECORDER section.**
If the recorder does not operate correctly, try again from step 2.

Notes

- **To turn off the power of the RM-E700, first turn the POWER switch off, then disconnect the AC power adaptor from the RM-E700.** If you do this in the reverse order, the stored data will be erased, and the lithium battery will be consumed quickly.
- The RM-E700 cannot store the functions of some remote control units such as those using supersonic waves.

Press the button within 30 seconds

Press the button within 30 seconds while the indication is flashing. Otherwise the indications disappear and learning mode is canceled. In this case, try again from step **2**.

When the remote control unit of the recorder does not have the same button as the flashing indication

You can store any desired function for the flashing button. Press the desired button.

To cancel the learning operation

Repeat pressing the COMMAND MEMORY button until the ×2 indication flashes. Press the COMMAND MEMORY button again.

To erase the stored function

Press the AC button while the MEMORY indication is on.

To change the stored function

Repeat pressing the COMMAND MEMORY button until the indication to be changed appears. Press the button of the function to be stored instead. The previous function is erased.

Notes

- Press the button firmly for more than 3 seconds until the indication changes from flashing to lighting steadily. Then wait for 1 second after the next indication starts flashing, and store the next function.
- Do not press another button until the indication stops flashing.
- During the learning operation, you cannot control the player and recorder with the RM-E700.
- When the power is turned off during the learning operation, the stored data will be erased.
- During the learning operation, do not move the RM-E700 and the remote control unit.

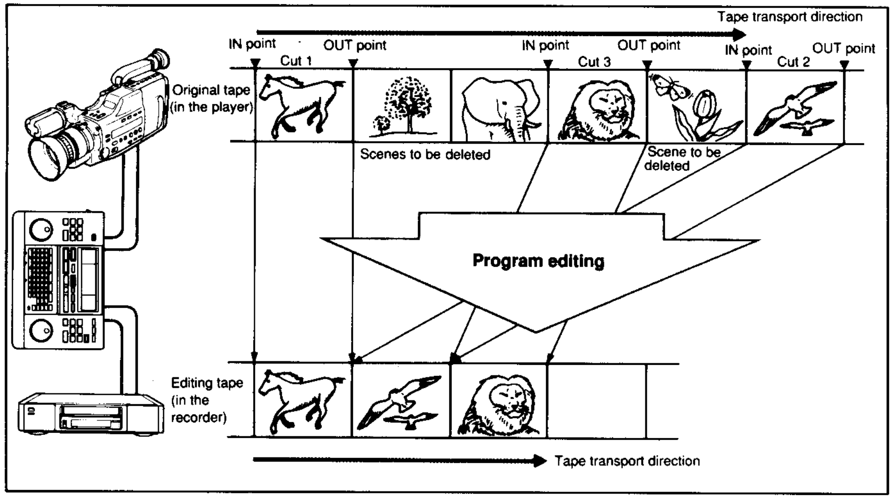
Step 2 Program Editing

Before You Begin

What is Program Editing?

Editing means to make a new tape from a prerecorded tape by deleting the unnecessary scenes and allocating the necessary scenes in the desired order.
The words used in this operating instructions are specified as follows:

Cut	The each scene to be allocated for editing
IN point	The start point of a Cut
OUT point	The end point of a Cut
Program	The group of Cuts of desired length and allocation
Program editing	The automatic editing function of the RM-E700 performed by pressing the PGM (program) EDIT button after making the program.



- **To adjust the lag** between the program and edited tape caused by the start time of the recorder or recording pause mode, **refer to the supplied brochure:How to use the "Timing Adjustment" section of the Demonstration Tape.**

The number of Cuts you can program

You can program up to 20 Cuts for one program editing. If you use a video equipment with the RC time code recording function such as a CCD-V800/V800E/V801 for the player and edit by the RC time code, you can program up to 99 Cuts.

Indications during frame-by-frame playback, slow playback and double speed playback

The following indications appear in the display widow of the PLAYER section.

Direction / Playback	Forward playback	Reverse playback
Frame-by-frame	**‖▷ and ▷**	**‖▷ and ◁**
Slow	**|▷ and ▷**	**|▷ and ◁**
Double speed	**×2 and ▷**	**×2 and ◁**

Notes on the video equipment with the RC time code recording function

When you use the video equipment with the RC time code recording function for the player, observe the following:—

- To perform editing using the RC time code, rewriting the time code from the beginning to the end of the tape is recommended. Otherwise accurate editing by designating the IN point and OUT point by frame is not possible.
- The RC time code is not compatible with the time code of products for institutional use or that of other manufacturers. When editing the tape with a time code other than the RC time code, rewrite the RC time code in the tape first.

Note on operation
During the editing operation, wait for about 1 second between operating each button. This could help to avoid errors.

Preparation before Program Editing

To perform the program editing, prepare the player and the recorder as follows.

Player

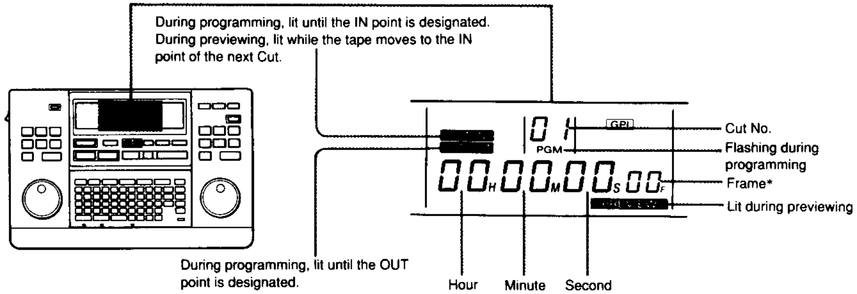
- Insert the original tape.
- When the player has an input/output selector for the audio/video jack, set it to output.
- When the player has an edit switch, set it to on. It prevents the picture from deteriorating.
- Set the power switch to VTR (PLAYER).
- When the player has a remote control unit, set so that the player is not operated by the remote control unit.
- When the player has an M/S selector, set to S.

Recorder

- Insert a tape which is ready to be recorded. (Check the position of the safety tab to prevent recording.)
- Set the input selector to LINE IN.
- Make the necessary settings for recording mode, recording level, etc. (For details, refer to the instruction manual of the recorder.)
- When the recoder has an M/S selector, set to S.

Program Editing—To Edit Scenes in Succession

The following indications appear during programming and previewing. The error messages appear when the programming was not performed correctly (page 52).


During programming, lit until the IN point is designated.
During previewing, lit while the tape moves to the IN point of the next Cut.

During programming, lit until the OUT point is designated.
During previewing, lit while the tape moves from the IN point to the OUT point.

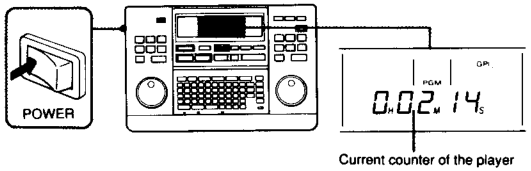
GPI
PGM
00H00M00S00F
Cut No.
Flashing during programming
Frame*
Lit during previewing
Hour
Minute
Second

- When the counter of the vieo equipment is a 4-digit counter, the display becomes the 4-digit counter.
- For GPI, see page 48.

* Appears only when the player is a video equipment with the RC time code recording function.

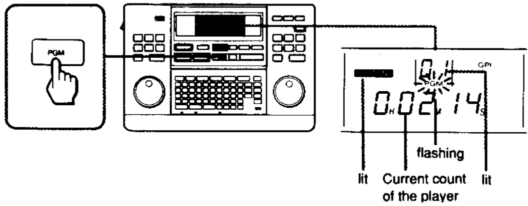
Operation 1 Set to Programming Mode.

1 **Turn on the power on this unit.**
The current counter of the player appears.



POWER
PGM
GPI
0H02M14S
Current counter of the player

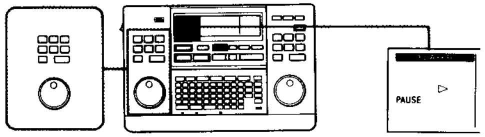
2 **Press the PGM button.**
The IN point of the previously designated Cut 1 (when no designation, ------) appears for about 3 seconds, then the current counter of the player appears. In the display window, PGM flashes, CUT IN and 01 light. The RM-E700 now accepts the designation of the Cut 1 IN point.



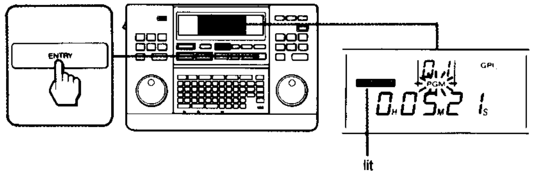
PGM
01
GPI
0H02M14S
flashing
lit
Current count of the player
lit

Operation 2 Designate the IN point of the Cut.

1 **Locate the IN point of Cut 1 (1st Cut) using the tape transport buttons and jog/shuttle dial of the PLAYER section, and set the player to the playback pause mode at the IN point.**
More than about 15 seconds (about 15 counts for the 4-digit counter) of the counter reading is necessary from the beginning of the tape to the IN point.



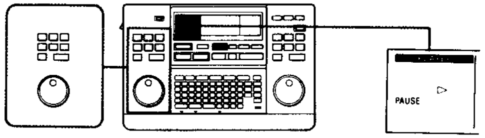
2 **Press the ENTRY button.**
The IN point of Cut 1 has been designated. In the display window, CUT IN disappears and CUT OUT lights. The RM-E700 now accepts the designation of the Cut 1 OUT point.



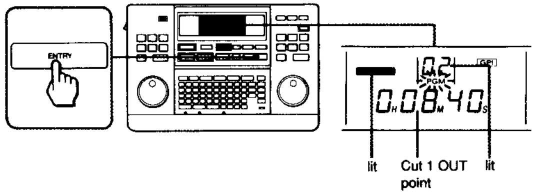
ENTRY
01
PGM
GPI
0H05M21S
lit

Operation 3 Designate the OUT point of the Cut.

1 **Locate the OUT point of Cut 1 using the tape transport buttons and jog/shuttle dial of the PLAYER section, and set the player to the playback pause mode at the OUT point.**
More than about 3 seconds (about 3 counts for the 4-digit counter) of the counter reading is necessary from the OUT point to the end of the tape.



2 **Press the ENTRY button.**
The OUT point of Cut 1 has been designated. In the display window, CUT OUT disappears , CUT IN and 02 light. The RM-E700 now accepts the designation of the Cut 2 IN point.



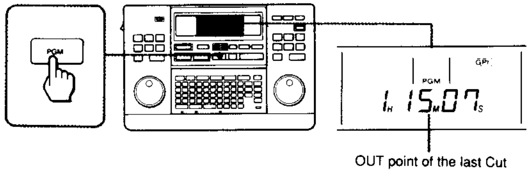
ENTRY
02
PGM
GPI
0H08M40S
lit
Cut 1 OUT point
lit

Continued on next page

Operation 4 Repeat Operations 2 and 3 to designate the other Cuts.

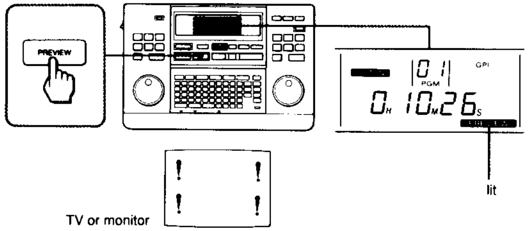
Operation 5 Finish the designation of the Cuts.

1 **After designating all Cuts, press the PGM button.**
In the display window, PGM turns from flashing to lighting steadily.
The program has been designated.



OUT point of the last Cut

2 **To preview the program, press the PREVIEW button.** (If you do not want to preview, skip this step.)
The tape is played back and exclaimation marks (!) appear at the corners from the IN point to the OUT point of the designated Cut.
To stop preview, press the PREVIEW button or the ■ STOP button of the PLAYER section.
To change the IN and OUT points, see page 27.

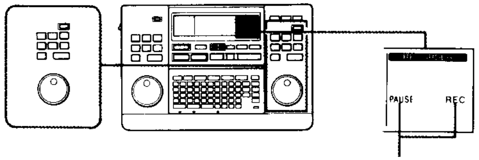


lit

TV or monitor

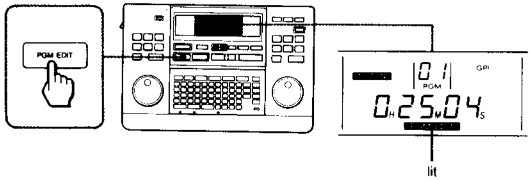
Operation 6 Perform the program editing.

1 **Locate the editing start point using the tape transport buttons and jog/shuttle dial of the RECORDER section, and set the recorder to the recording pause mode.**



Lights only in the case of the connection 1.

2 **Press the PGM EDIT button.**
PGM EDIT lights in the display window, and the RM-E700 starts program editing automatically.



lit

Notes

- The program editing is not possible when the maximum recording pause mode period of the recorder is shorter than the transporting time from a Cut to the next Cut of the original tape in the player.
- After programming, do not take the original tape out of the player until the program editing is performed.

To stop program editing

Press the PGM EDIT button.
Or, press the ■ STOP button of either the PLAYER or RECORDER section.

Note on recording pause mode

For some types of recorders, you must press the record button in the playback pause mode to enter the recording pause mode.

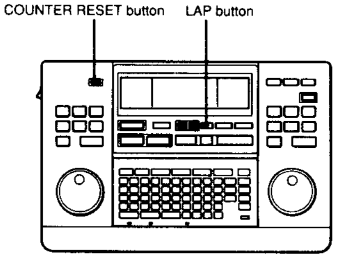
To reset the counter of the player to $00_{H}00_{M}00_{S}$ (00 00)

Press the COUNTER RESET button.
When you edit by the RC time cord, the COUNTER RESET button does not operate.

To check the total program time

When the counter of the player shows the hour/minute/second indication, you can check the total program time together with the designated cut numbers until the last programmed Cut.
Press the LAP button.
In the display window, 01 and the time of Cut 1 appear, then the Cut numbers from 2 and the total program time until the displayed Cut number appear every 1 second in sequence. Meanwhile, the TOTAL LAP indication appears. After the time of all the designated Cuts is shown, the Cut number indication disappears and the total program time remains.

To turn off the total program time, press the LAP button again. The RM-E700 returns to the programming mode.



How the player operates during the program editing or previewing

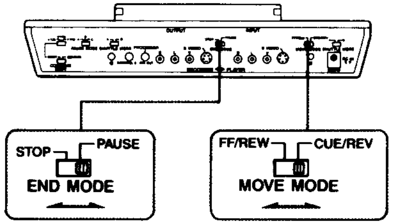
During the program editing or previewing, the player starts to playback from about 15 seconds (about 15 counts for the 4-digit counter) before the IN point. The player stops at about 2 seconds (about 2 counts for the 4-digit counter) after the OUT point.
Using the MOVE MODE selector at the rear, you can select tape transport mode between the Cuts. Set the MOVE MODE selector before the program editing or previewing.

- **To fast-forward or rewind the tape, set to FF/REW.**
  When the interval between the Cuts is within about 1 second, the player performs normal playback or fast-forward/reverse playback.
- **To playback while fast-forwarding or reversing, set to CUE/REV (review).**
  When the interval between the Cuts is within about 15 seconds, the player performs normal playback.

How to use the END MODE selector at the rear

Using the END MODE selector, you can select either the stop mode or pause mode for the player and recorder to be set to after program editing, and for the player to be set to after previewing. Set the END MODE selector before program editing or previewing.
To set to stop mode → **Set the END MODE selector to STOP.**
To set to pause mode → **Set the END MODE selector to PAUSE.**
Stop mode is recommended when you may leave the site during program editing or previewing.
Pause mode is recommended when:

- you continue program editing.
- you find out a Cut to be changed during previewing.



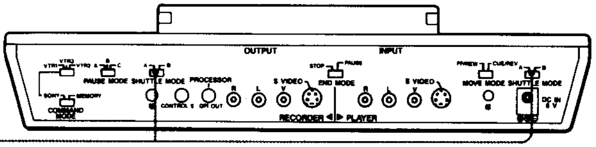
To minimize the lag between the program and the edited tape
It is inevitable that a lag occurs between the program and the edited tape. There are three causes. One of them is that the IN and OUT points are designated by the counter readings. To minimize the lag by other two causes, we suggest the following.

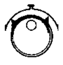
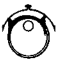
Cause	Countermeasure
• The IN and OUT points are set by the counter reading, and there is a lag between the playback picture and the counter reading of the player*.	We recommend using the picture search to designate the IN and OUT points.
• There is a lag at the start time or at the recording pause of the recorder.	Perform the timing adjustment referring to the brochure: How to use the "Timing Adjustment" section of the Demonstration Tape — for more accurate recording of the IN and OUT points during program editing.

* There is no lag when you edit by the RC time code.

Operating the Jog/Shuttle Dial

The operation is the same for both the jog/shuttle dials of the PLAYER and RECORDER sections.
If connection **4** (page 16) is used, you cannot use the jog/shuttle dial of the RECORDER to control the recorder.
Select the function using the SHUTTLE MODE selector at the rear.



		Using the shuttle ring	Using the jog dial
SHUTTLE MODE	**A:** When an infrared jog/shuttle remote control unit is not supplied, or it is not available on option to operate your video equipment	 playback pause normal playback fast-reverse playback (review) fast-forward playback (cue)	You cannot use the jog dial.
	B: When an infrared jog/shuttle remote control unit is supplied, or it is available on option to operate your video equipment	 playback pause 1/5-speed reverse playback reverse playback X2-speed reverse playback fast-reverse playback (review) 1/5-speed playback normal playback X2-speed playback fast-forward playback (cue)	to reverse to forward

When you cannot set the recorder to the playback pause mode with the jog/shuttle dial, use the **II** button.

Notes
The jog/shuttle dial may operate wrong in the following cases.

- When you turn the jog/shuttle dial too quickly.
- The jog/shuttle dial may not be operative for the connections other than Connection **1**. (page 10)
- When the player or the recorder is slow to react to signals from the remote control unit.
- When you do not need to keep pressing the button of the remote control unit of the video equipment to do the picture search.

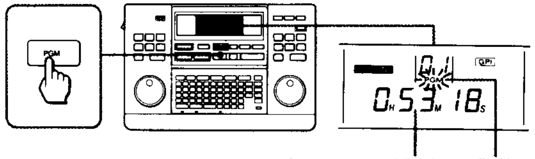
Changing the IN and OUT Points

To change the IN point or the OUT point of a Cut, call up the point to be changed on the screen using the ⇦PGM, PGM⇨, and GOTO buttons. Then designate the desired point again.

Operation

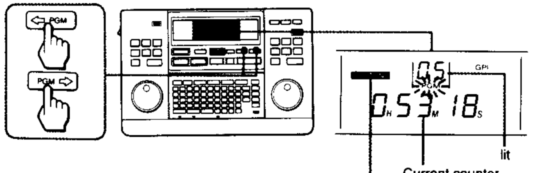
Let's change the IN point of Cut 5 for example. When changing the IN/OUT point during programming, skip step **1**.

1 **Press the PGM button.**
The IN point of Cut 1 appears for about 3 seconds, and then the current counter of the player appears.



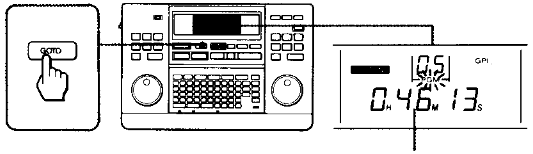
Current counter of the player flashing

2 **Press the ⇦ PGM or PGM ⇨ button until the CUT IN indication for Cut 5 appears.**
The IN point of Cut 5 appears for about 3 seconds, and then the current counter of the player appears.



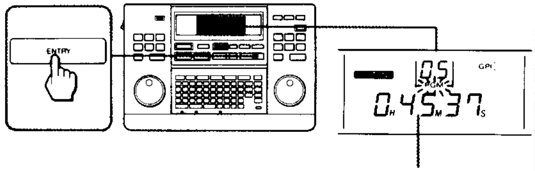
lit
Current counter of the player
lit

3 **Press the GOTO button.**
The player sends the original tape to the IN point of Cut 5 and enters playback pause mode.



IN point of Cut 5

4 **Locate and designate the scene to be replaced as the IN point of Cut 5, using the tape transport buttons and jog/shuttle dial of the PLAYER section.**



New IN point of Cut 5

How the player operates when the GOTO button is pressed
Using the MOVE MODE selector, you can select the tape transport mode of the player when you press the GOTO button. Set the MOVE MODE selector before pressing the GOTO button. When you edit by the RC time code, there will be the lag of several frames at the stop position.

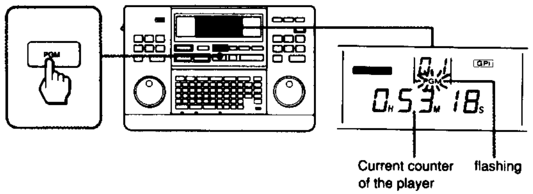
- To fast-forward or rewind the tape, set to FF/REW. When the current position of the tape is close to the designated IN or OUT point, the player performs normal playback or fast-forward/reverse playback.
- To playback while fast-forwarding or reversing, set to CUE/REV. When the current position of the tape is close to the designated IN or OUT point, the player performs normal playback.

Clearing All Cuts

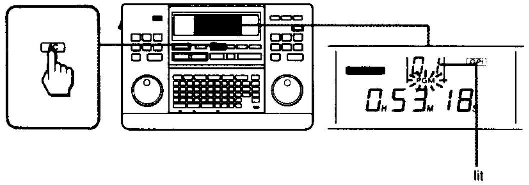
How to clear all the designated Cuts in the program is explained here. Use this procedure also to clear the previous program.

Operation When clearing all Cuts during programming, skip step **1**.

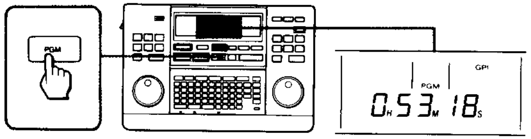
1 **Press the PGM button.**
The IN point of Cut 1 appears for about 3 seconds, and then the current counter of the player appears.


PGM
0H 53M 18S
Current counter of the player
flashing

2 **Press the AC button.**
All the designated Cuts are cleared from memory. "– – – – – -" appears for about 3 seconds, then the current counter of the player appears. The RM-E700 now accepts the designation of the IN point of Cut 1.


AC
0H 53M 18S
lit

3 **When you do not want to enter a new program, press the PGM button.**

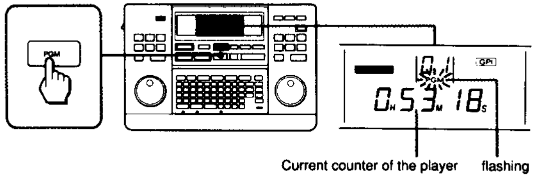

PGM
0H 53M 18S

Deleting a Cut

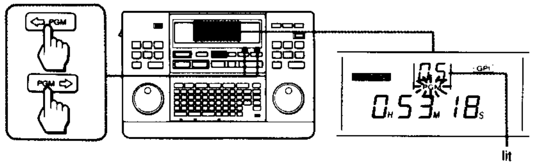
When you want to delete a Cut in the program, first delete the IN point and then the OUT point.

Operation Let's delete Cut 5 for example.
When deleting the Cut during programming, skip step **1**.

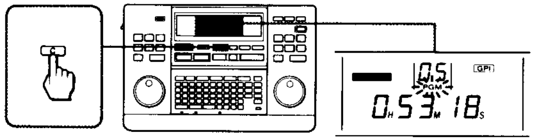
1 **Press the PGM button.**
The IN point of Cut 1 appears for about 3 seconds, and then the current counter of the player appears.


PGM
0H 53M 18S
Current counter of the player
flashing

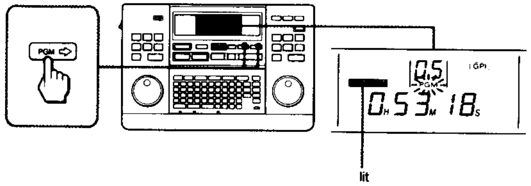
2 **Repeat pressing the ⇦PGM or PGM⇨ button until the CUT IN indication for Cut 5 appears.**
The IN point of Cut 5 appears for about 3 seconds, and the current counter of the player appears.


⇦PGM
PGM⇨
0H 53M 18S
lit

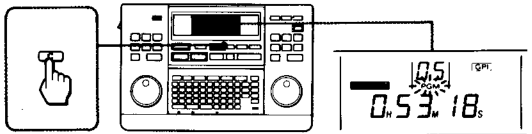
3 **Press the C button.**
The IN point of Cut 5 is cleared from memory. "– – – – – -" appears for about 3 seconds, and then the current counter of the player appears.



4 **Locate the OUT point of Cut 5 by pressing the PGM⇨ button.**
The OUT point of Cut 5 appears for about 3 seconds, and then the current counter of the player appears.


PGM⇨
0H 53M 18S
lit

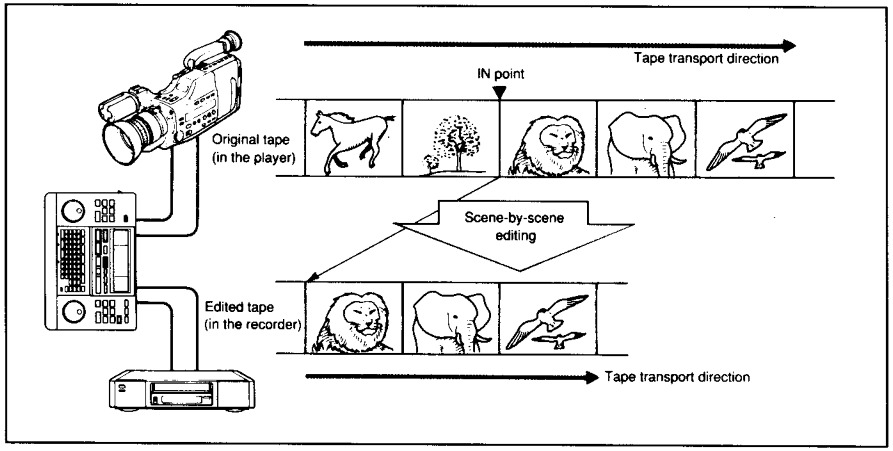
5 **Press the C button.**
The OUT point of Cut 5 is cleared from memory. "– – – – – -" appears for about 3 seconds, and then the current counter of the player appears.



Scene-by-Scene Editing — To Edit Scenes One by One

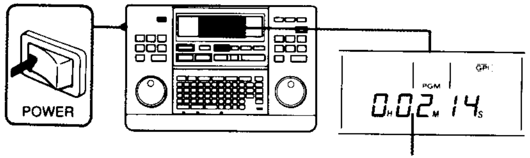
What is Scene-by-Scene Editing?

In scene-by-scene editing, you designate only the IN point of the scene. Then you select and connect the scenes one by one while viewing the picture.


Tape transport direction
IN point
Original tape (in the player)
Scene-by-scene editing
Edited tape (in the recorder)
Tape transport direction

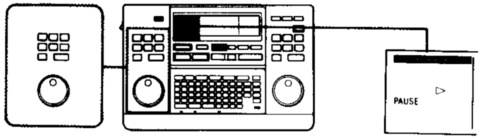
Operation

1 **Turn the power on this unit.**
The current counter of the player appears.

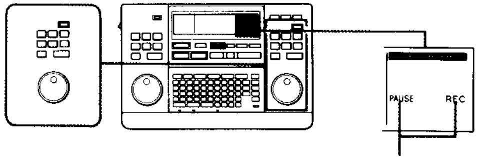

POWER
PGM
GPI
0.02.14

Current counter of the player

2 **Locate the start point of the desired scene (IN point), using the tape transport buttons and jog/shuttle dial of the PLAYER section, and set the player to the playback pause mode.**

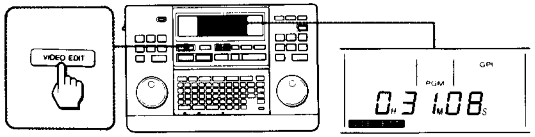


3 **Locate the start point of the tape to be recorded, using the tape transport buttons and jog/shuttle dial of the RECORDER section, and set the recorder to the recording pause mode.**

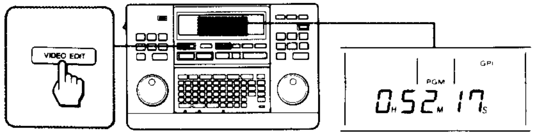


Lights only in the case of the Connection 1.

4 **Press the VIDEO EDIT button.**
The VIDEO EDIT indication lights and the RM-E700 starts scene-by-scene editing. The player rewinds the tape about 15 seconds before the IN point and starts playback. The recorder starts recording from the IN point.


VIDEO EDIT
PGM
GPI
0.31.08

5 **Press the VIDEO EDIT button at the end of the desired scene.**
The VIDEO EDIT indication turns off. The player continues playback for about 2 seconds and enters the playback pause mode. The recorder immediately enters the recording pause mode.
The END MODE selector at the rear does not work for scene-by-scene editing.

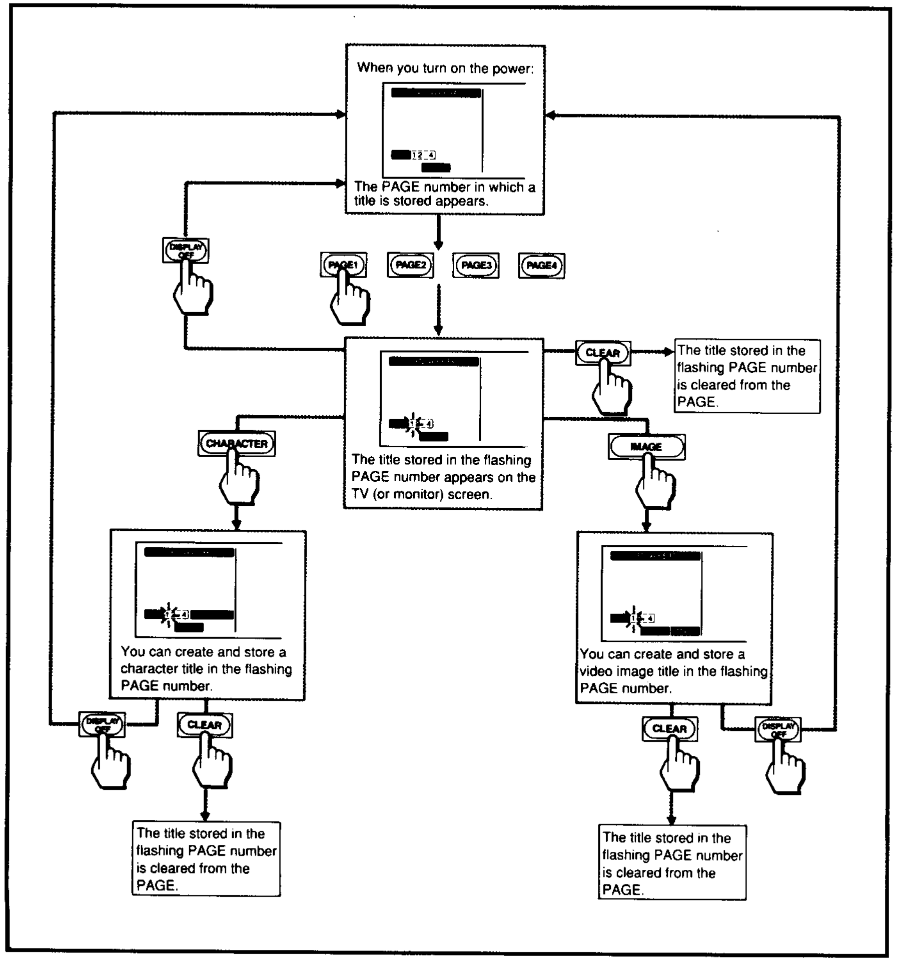

VIDEO EDIT
PGM
GPI
0.52.17

6 **Repeat from step 2 to 5.**

To stop scene-by-scene editing
Press the VIDEO EDIT button again, or the ■ STOP button of the PLAYER section.

Creating/Displaying Titles

Indications while creating or displaying the title
You can create 4 pages of titles using either characters or video images, and store one each in PAGE 1 to 4.
The following chart shows what you can do when each indication is on.



When you turn on the power:

The PAGE number in which a title is stored appears.

The title stored in the flashing PAGE number appears on the TV (or monitor) screen.

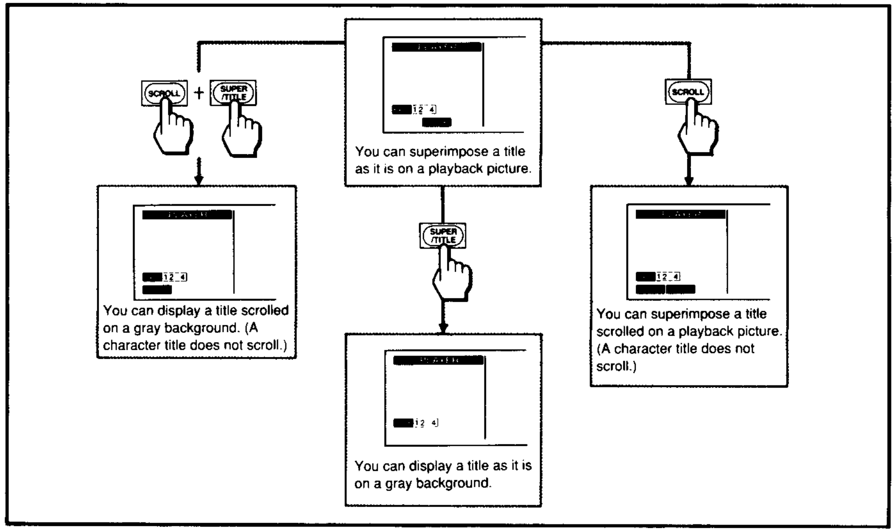
The title stored in the flashing PAGE number is cleared from the PAGE.

You can create and store a character title in the flashing PAGE number.

You can create and store a video image title in the flashing PAGE number.

The title stored in the flashing PAGE number is cleared from the PAGE.

The title stored in the flashing PAGE number is cleared from the PAGE.



You can superimpose a title as it is on a playback picture.

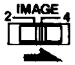
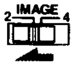
You can display a title scrolled on a gray background. (A character title does not scroll.)

You can superimpose a title scrolled on a playback picture. (A character title does not scroll.)

You can display a title as it is on a gray background.

Title to be stored in each PAGE

- To store a fine video image, set the IMAGE 2/4 selector to 2. The density of the video image improves.
- It is possible to store both character and video image titles in one PAGE. The character title is overlaid on the video image title.

IMAGE 2/4 selector	Title to be stored in each PAGE			
	PAGE 1	PAGE 2	PAGE 3	PAGE 4
	• Character title • Video image	• Character title • Video image	• Character title • Video image	• Character title • Video image
	• Character title • Fine video image	• Character title • Fine video image	• Character title	• Character title

Creating a Character Title

Use the title keyboard to create a character title.

How to Use the Title Keyboard

To input a character
After pressing the PAGE and CHARACTER buttons, press the desired letter key.
Check the mode indicators under the CAPITAL, SHIFT and INS buttons.
While the CAPITAL indicator is lit, the title keyboard is in the mode to input capital letters.
While the SHIFT indicator is lit, the title keyboard is in the mode to input the letters on the right part of the key.

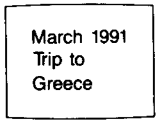
While the INS indicator is lit, the title keyboard is in the mode to insert a letter.
To enter each mode, press the CAPITAL, SHIFT or INS button.
To release each mode, press the CAPITAL, SHIFT or INS button again. The indicator turns off.

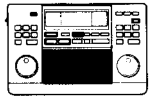
Example

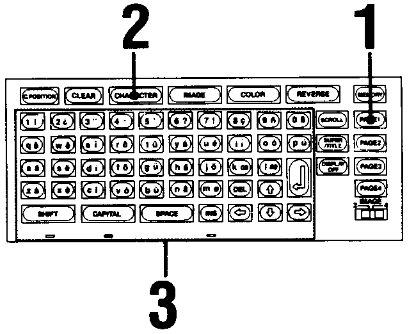
Letter to be input	To input	CAPITAL indicator	SHIFT indicator	Press:
Lowercase letter or number on the left part of the key	a	Off	Off	a
Lowercase letter on the right part of the key	ä	Off	Lit	a
Capital letter on the left part of the key	A	Lit	Off	a
Capital letter on the right part of the key	Ä	Lit	Lit	a
To put a space between letters	—	—	—	SPACE key
To insert a letter	—	—	—	INS key to turn on the indicator, then letter key
To delete a letter	—	—	—	DEL key
To open a new line	—	—	—	⏎ key
To move the cursor	—	—	—	⇧,⇦,⇩,⇨ keys

Operation 1 Type the title.

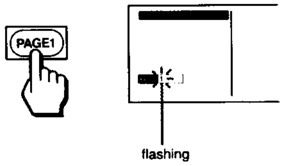
You can type 12 characters per line, and 4 lines per page.
Let's store the following title in PAGE 1, for example.



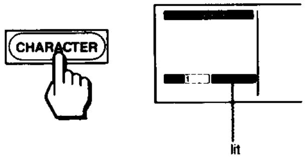




1 **Press the PAGE 1 button.**



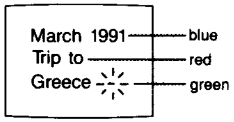
2 **Press the CHARACTER button.**
The CHARACTER indication appears in the display window.
The cursor flashes on the screen of the TV (or monitor).

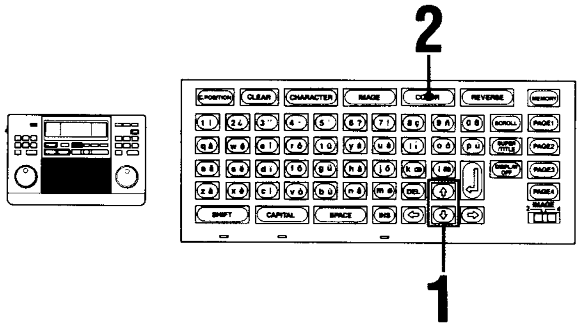


3 **Type in a character.**
The typed character appears at the cursor position.
The characters are stored automatically.
If you want to change the color and/or position of the title, go to Operations **2** and/or **3**. (page 36)

Operation 2 Select the color.

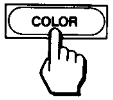
Eight colors are available for each line.


March 1991
Trip to
Greece
blue
red
green



1 **Move the cursor using ⇧ and ⇩ keys, to any point on the line for which you want to change the color.**

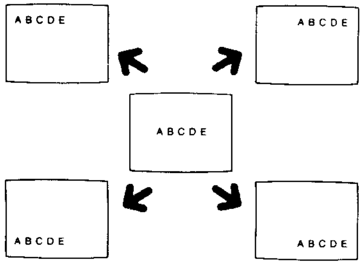
2 **Press the COLOR button until the line becomes the desired color.**
Each time you press the COLOR button, the color changes as follows.
white → violet → cyan → blue
↑ ↓
black ← green ← red ← yellow

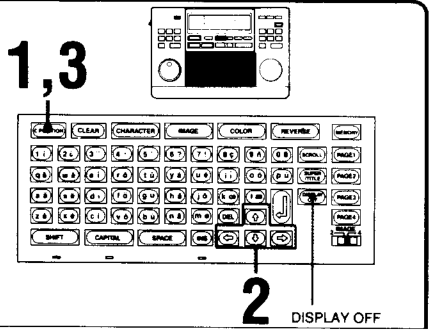


3 **Repeat steps 1 and 2 for each line.**
The characters are stored in the desired color.
If you want to change the position of the title, go to Operation **3**.

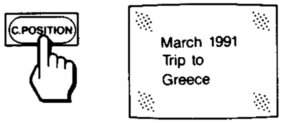
Operation 3 Select the position.

You can move the title to the desired position on the screen as follows.

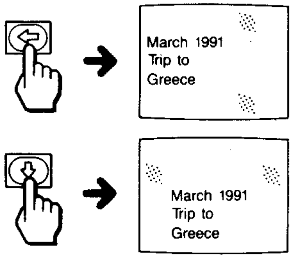

ABCDE
ABCDE
ABCDE
ABCDE
ABCDE


1,3
2
DISPLAY OFF

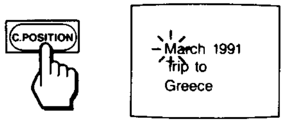
1 **Press the C.POSITION button.**
Dot patterns appear around the character title.


C.POSITION
March 1991
Trip to
Greece

2 **Move the title using the ⇦, ⇧, ⇩, and⇨ keys.**
To move to the left, press⇦ .
To move to the right, press⇨ .
To move to the upward, press ⇧ .
To move to the downward, press ⇩ .


March 1991
Trip to
Greece
March 1991
Trip to
Greece

3 **Press the C.POSITION button again.**
The dot patterns disappear. The colored characters are stored at the assigned position.


C.POSITION
March 1991
Trip to
Greece

When you have finished creating the title
Press the DISPLAY OFF button.
The title disappears.

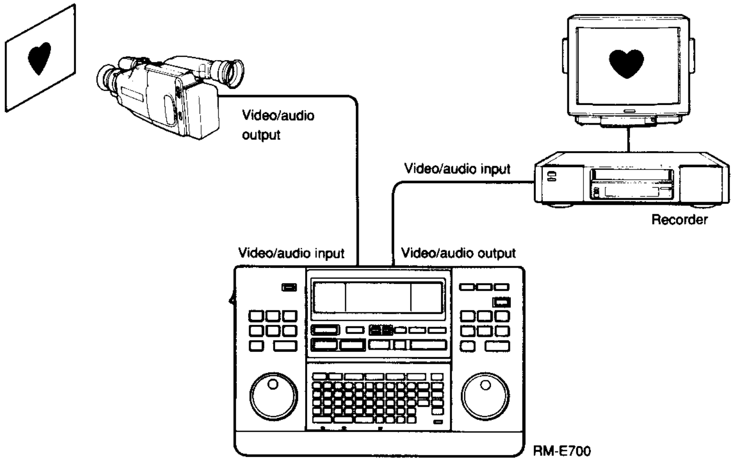
To create another character title
Press another PAGE button and repeat from step **3** of Operation **1**.

To change the color or position of the character title later
You can change the color or position anytime.
1 Display the title by pressing the PAGE button of the title.
2 Display the CHARACTER indication.
3 Follow the same operations as in selecting the color or position.

Creating a Video Image Title

You can create your own title by drawing or writing a title on a stiff piece as paper or cardboard. Use a plain white paper and write the title in a dark color in bold characters. A simple and bold title is recommended.

Operation 1 Display the desired video image on the TV or monitor.



1 **Video camera recorder: Turn on and set to camera mode.**

2 **Recorder: Set the input select switch to the line input.**

3 **TV or monitor: Select the channel or set the input selector to VTR.**

Hints for shooting

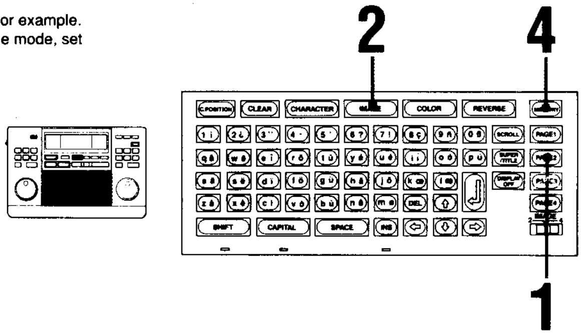
- Check the appearance of the title on your TV or monitor to decide the most effective title size.
- We recommend using an appropriate light.

Note

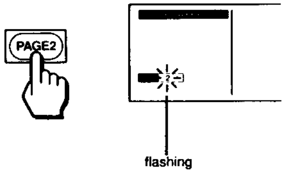
Position the video image with some spaces at the top and bottom portion of the paper. The top and bottom portion may not be included during recording.

Operation 2 Store the title.

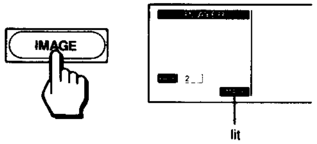
Let's store a video image in PAGE 2, for example. To store the video image using the fine mode, set the IMAGE 2/4 selector to 2.



1 **Press the PAGE 2 button.**

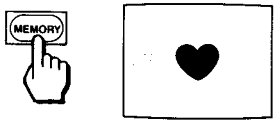


2 **Press the IMAGE button.**
The IMAGE indication appears in the display window.



3 **Check the focusing on the TV (or monitor).**

4 **Press the MEMORY button.**
The video image is stored in the memory.
If you want to change the color, go to Operation **3**.



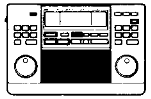
Operation 3 Select the color.

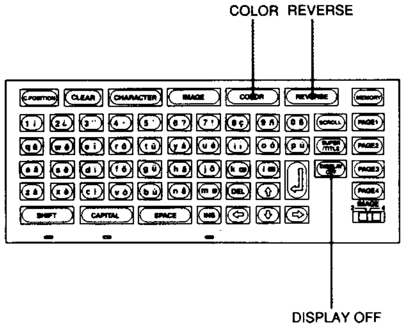
Eight colors are available. The color scheme of the title can be reversed.

To select color, press the COLOR button.

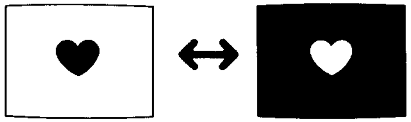
Each time you press the COLOR button, the color changes as follows.

white → violet → cyan → blue
↑ ↓
black ← green ← red ← yellow





To reverse the color scheme, press the REVERSE button.
To release the reverse mode, press the REVERSE button again.



When you have finished creating the title
Press the DISPLAY OFF button.
The title disappears.

To store the playback picture of the player as the title
You can use a playback picture in silhouette as a title. The action in the picture will be frozen.

1. Press the SUPER/TITLE button until the SUPER indication appears in the display window.
2. Press the desired PAGE button.
3. Press the IMAGE button so that the IMAGE indication appears in the display window.
4. Playback the tape.
5. Press the MEMORY button at the desired scene.
   The video image is stored.

Notes

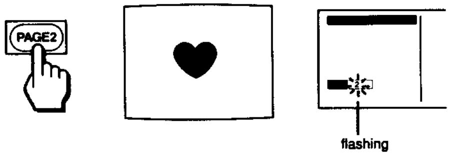
- Select a high contrast scene. The image is processed according to the brightness of the scene.
- When the tape is played back in the picture search mode, in the playback pause mode or in any mode except the normal mode, the picture may be distorted or may not be stored.

Storing Both the Character and Video Image Titles in One PAGE

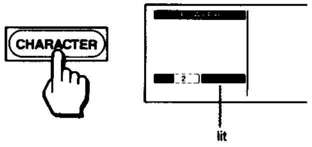
When you want to store the character and video image titles in one PAGE, proceed as follows. The character title is overlaid on the video image title.
Let's use the video image stored in PAGE 2, for example.

Operation

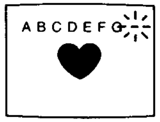
1 **Press the PAGE 2 button.**
The video image appears.



2 **Press the CHARACTER button.**
The CHARACTER indication appears in the display window.



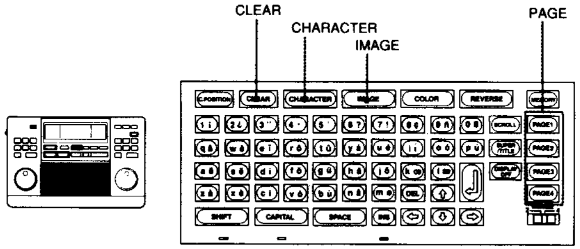
3 **Type the characters.**
The characters are stored with the video image in PAGE 2.



Clearing the Stored Title

Operation

You can clear the character and/or video image title from a PAGE.



1 **Press the PAGE button of the title to be cleared.**
The title appears on the screen.

2 **Press the CLEAR, CHARACTER, IMAGE buttons as shown in the table below.**

Stored title	Title to be cleared	Press:
Character title	Character title	CLEAR
Video image	Video image	CLEAR
Character title and video image	Character title	CHARACTER and then CLEAR
	Video image	IMAGE and then CLEAR
	Both	CLEAR

The title is cleared from the PAGE.

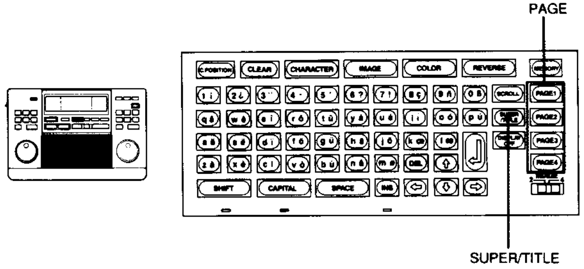
Displaying the Stored Title

How you can display the title on the screen
You can display the stored titles in the following ways:
- Superimposed — as it is
  - scrolled from bottom to top
- On a gray background — as it is
  - scrolled from bottom to top

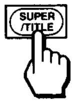
Note
The character title does not scroll.

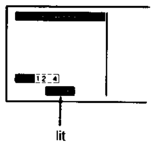
Superimposing the Title on the Playback Picture

Operation



1 **Press the SUPER/TITLE button until the SUPER indication appears in the display window.**





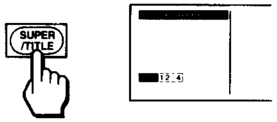
2 **Display the stored title by pressing the PAGE button.**

Displaying the Stored Title

Displaying the Title on a Gray Background

Operation

1 **Press the SUPER/TITLE button until the SUPER indication disappears from the display window.**



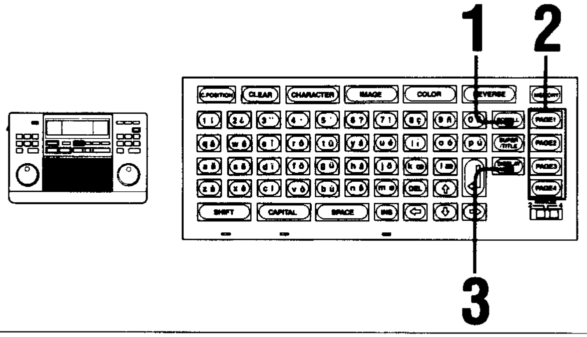
2 **Display the stored title by pressing the PAGE button.**

Displaying the Title as It is

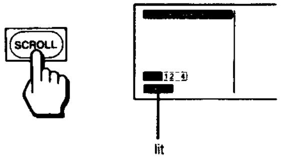
Press the PAGE button of the desired title.
To turn off the title, press the DISPLAY OFF button.

Displaying the Title Scrolled from Bottom to Top

Operation

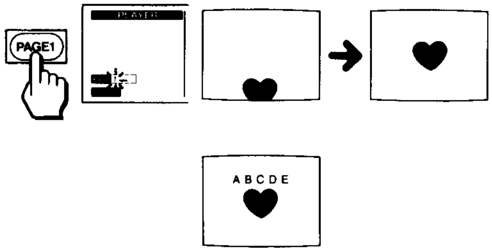


1 **Press the SCROLL button until the SCROLL indication appears in the display window.**



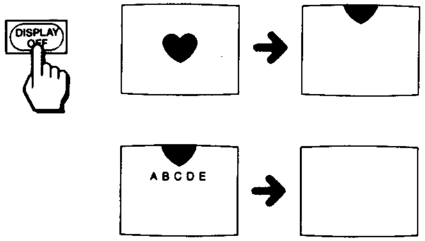
2 **Press the PAGE button of the desired title.**
The PAGE indication flashes in the display window.
The title appears and scrolls from the bottom to the center.

When a character titles is stored with the video image title:
The character title appears after the video image title stops at the center.

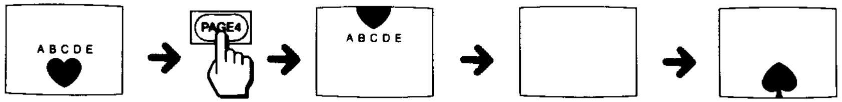


3 **To turn off the title, press the DISPLAY OFF button.**
The title scrolls from center to top and disappears.

When a character title is stored with the video image title:
The character title disappears after the video image disappears.

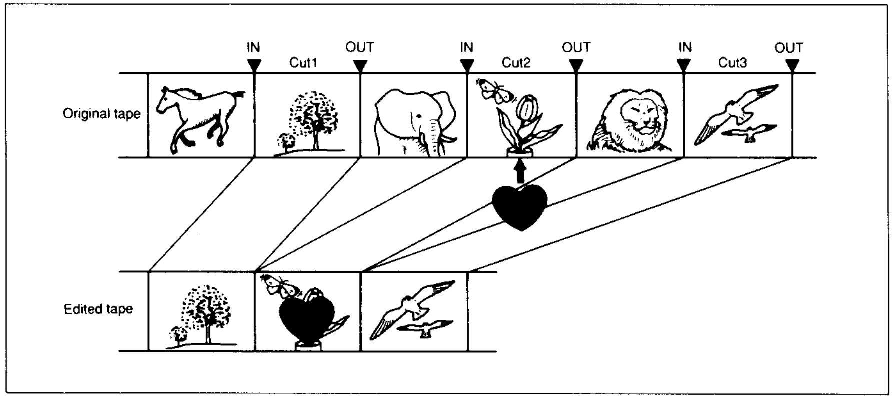


To scroll the titles in succession
For example, to scroll the title in PAGE 4 after the title in PAGE 3, press the PAGE 4 button when the title in PAGE 3 stops at the center.



After the title in PAGE 3 disappears, the title in PAGE 4 appears from the bottom of the screen.

Superimposing Titles in Program Editing



To insert the titles in the program, designate the desired title while designating Cuts.
To insert the titles after designating Cuts, locate the position to insert the title using the ⇦ PGM/PGM ⇨ buttons and press the PAGE button. In this case, you cannot superimpose the title scrolled.

Note
When a title is superimposed in a Cut, the title appears several frames delayed from the designated IN and OUT points of the Cut.

For program editing operation, see page 22.
To check whether the title was correctly inserted or not, preview the program by pressing PREVIEW button before pressing the PGM EDIT button.

To Superimpose the Title

Let's superimpose the title in PAGE 3 as Cut 2 of the program, for example.

1 **To begin program editing, press the PGM button.**

2 **Designate the IN and OUT points of Cut 1.**

3 **Locate the scene where you want to superimpose the title, and set the player to the playback pause mode.**

4 **Press the ENTRY button.**
The IN point of the Cut 2 is designated.

5 **Press the PAGE 3 button.**
The title in PAGE 3 is superimposed on the playback picture of Cut 2.

6 **Press the ENTRY button at the end point of Cut 2.**
The OUT point of Cut 2 is designated.

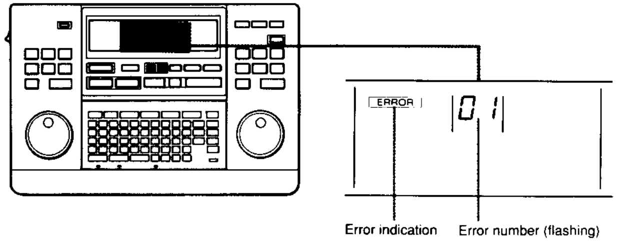
7 **Continue designating.**

When you scroll the title
- The title appears and scrolls from the bottom to the center of the screen in a Cut, and then scrolls up from the center to the top and disappears in the next Cut. For this operation, the 2 Cuts must be a continuous scene. Designate the OUT point of the Cut where you superimposed the title and the IN point of the next Cut by pressing the ENTRY button twice.
- While designating the Cuts, the title does not scroll even if the SCROLL indication is on the display window.

To cancel the title
1 Locate the IN or OUT point of the Cut where the title is superimposed.
2 Press the DISPLAY OFF button.

To change the title
1 Locate the IN or OUT point of the Cut where the title is superimposed.
2 Press the PAGE button to be newly designated.

Error Messages in the Display Window



Error No.	Message	Countermeasure
01	The OUT point comes before the IN point of the Cut.	Locate the unnecessary IN or OUT point using ⇦PGM/PGM⇨, and press C. Designate again.
02	The IN or OUT point of the previously programed Cut is designated again.	If you want to change the IN or OUT point of the Cut, see page 27. To program another Cut, locate the desired IN or OUT point using ⇦PGM/GPM⇨ buttons.
03	The previous program remains in the RM-E700. The counter (hour/minute/second, 4-digit, RC time code) of the previous player was different from that of the present player.	Press AC to clear all the Cuts, then enter a new program. When the player has a counter selector, set to the same counter.
05	You pressed PGM when the player is neither connected nor turned on.	Connect the player to the RM-E700 or turn on the player. 1)
06	The player is disconnected while you are programming, or while you are sending the tape from the IN point to the OUT using GO TO.	Connect the player and the RM-E700, or turn on the player. 1)
10	When beginning the program editing, the counter (hour/minute/second, 4-digit, RC time code) of the program is different from that of the present player.	Press AC to cancel all the Cut, then enter the program again. When the player has a counter selector, set to the same counter before program editing.
11	During the program editing, the necessary function of the remote control unit was not stored, when the recorder is not Sony's.	Store the function of the remote commander, see page18. It is necessary to store the recording, playback, stop, fast-forward, rewind and pause functions.
12	During the program editing or scene-by-scene editing, the safety tab of the tape in the recorder is set to prevent recording.	Check if you may record on the tape, then set the safety tab for recording.
15	When the player is not connected, or is not turned on, you pressed either PGM EDIT, VIDEO EDIT, or PREVIEW button.	Connect the player and the RM-E700, or turn on the player. 1)

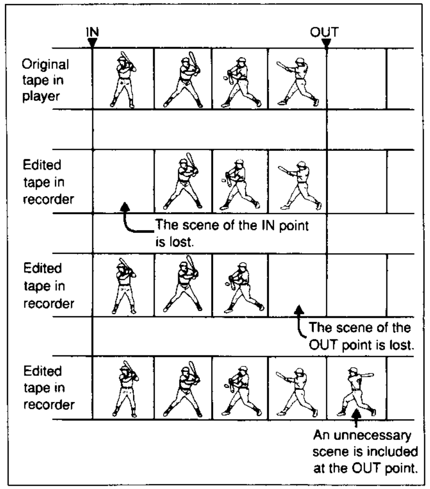
Error No.	Message	Countermeasure
16	During program editing, previewing, or scene-by-scene editing, the player is disconnected, or is turned off.	Connect the player and the RM-E700, or turn on the player. 1)
41	Appears when you try to store the video image title in PAGE 3 or 4 with the IMAGE 2/4 selector set to 2.	When the IMAGE 2/4 selector is set to 2, you cannot store the video image title in PAGE 3 or 4. To store the video image title in PAGE 3 or 4, set the IMAGE 2/4 selector to 4.
50	During editing by the RC time code, appears when a Cut is as long as 4 to 29 frames (4/30 to 29/30 seconds) for the NTSC system models, and 4 to 24 frames (4/25 to 24/25 seconds) for the PAL models.	With some player or recorder models, you may not be able to edit as desired. After programming, check that the program editing is operative. 2)

1) With some player models, the error message does not appear when the player is turned off.
2) With some player or recorder models, the program editing is inoperative even if the error message does not appear, when the Cut is more than 1 second long. After programming, check that the program editing is operative.

Timing Adjustment

What is the Timing Adjustment ?

When you play back the tape which you had edited using the program editing, the IN point and/or the OUT point may not be the scene you had designated. Some scenes may not appear, or some unnecessary scenes may be included. There are several possible causes for such discrepancies: some recorders are late to start recording, some recorders rewind the tape at the end of recording, or some recorders are late to enter the recording pause mode after recording. Timing adjustment is the operation to compensate for the lag caused by the above characteristics of the recorder so that the Cuts are more accurately recorded from the IN point to the OUT point as you designated. (For details of such lag, refer to page 26 in the operating instructions.)
The lag caused by the recorder results in an edited tape as shown on the right.


IN
OUT
Original tape in player
Edited tape in recorder
The scene of the IN point is lost.
Edited tape in recorder
The scene of the OUT point is lost.
Edited tape in recorder
An unnecessary scene is included at the OUT point.

Why the beginning of a Cut is lost

For the program editing operations, the RM-E700/RM-E500 transmits the control signal to the player to playback from about 15 seconds before the IN point and to the recorder to release the recording pause mode at the IN point. But, some recorders require several seconds before starting recording after the recording pause mode is released. This is why the beginning of the Cut is lost.

Why the end of a Cut is lost, or an unnecessary scene is included at the end of a Cut

For the program editing and scene-by-scene editing operations, the RM-E700/RM-E500 transmits the control signal to the player to playback until about 2 seconds after the OUT point and to the recorder to enter the recording pause or stop mode at the OUT point. But, some recorders require several seconds before entering the recording pause or stop mode after recording. Or, when starting next recording, some recorders rewind the tape a little and enter the recording pause or stop mode. This is why the end of the Cut is lost, or an unnecessary scene is included at the end of the Cut.

Once the timing adjustment has been done, the RM-E700/RM-E500 will automatically compensate for the characteristics of the recorder to ensure that the IN and OUT points are recorded accurately. If you use another, different model for recording, be sure to do that timing adjustment procedure again for that unit.

The RM-E700/RM-E500 can compensate for the lag:
at IN point – up to 5 seconds by 1/30 second (1 frame*) for the NTSC system and by 1/25 second (1 frame*) for the PAL system
at OUT point – from –1 second to 5 seconds by 1/30 second for the NTSC system and by 1/25 second for the PAL system.

*** Frame**
One frame equals one image. However the number of frames displayed in one second differs according to the TV system.
In the NTSC system, about 30 frames are displayed per second.
In the PAL system, 25 frames are displayed per second.

For the customer having a Sony video cassette recorder

If your video cassette recorder is one of the following Sony models, the timing adjustment data is provided. Therefore, you do not need to do the entire procedure. Use the appropriate data and do only 4, 5 and 7 of the flowchart on page 3. However, even if the model is same, the data may be slightly different depending on the unit. If you want to know the exact data, perform the entire procedure.

Model	Timing adjustment data	
	Cut IN	Cut OUT
EV-S800	01S 12F	00S 05F
EV-S900	01S 12F	00S 05F
EV-S550	01S 15F	00S 06F
EV-S550E	01S 20F	00S 06F
EV-S850PS	01S 12F	00S 05F
EV-S1000E	01S 19F	00S 07F
EDV-9500	00S 23F	00S 05F
EDV-9300	00S 23F	00S 05F
SLV-45UC	01S 00F	00S 04F
SLV-757UC	01S 00F	00S 04F
SLV-686HF	01S 01F	00S 04F
SLV-353VP	01S 03F	00S 00F
SLV-757VP	01S 03F	00S 00F
SLV-X50PS	01S 02F	–00S 02F
CCD-V101	01S 14F	00S 05F
CCD-V5000	01S 13F	00S 05F
CDD-V5000E	01S 19F	00S 05F
CCD-TR4	00S 13F	00S 06F
CCD-TR5	01S 22F	00S 07F
CCD-TR7	00S 13F	00S 07F
CCD-V99	01S 14F	00S 05F

The data is based on that the recorder's connection is LANC (control S for SLV-X50PS) and recording mode is SP (βII for EDV-9500 and EDV-9300).

Notes

On the recorder
- With some recorders, the lag at the IN point of the first Cut of the program is different from that of other Cuts of the program.
- With some recorders, the lag at the OUT point of the last Cut of the program is different from that of other Cuts of the program.
- Perform the timing adjustment again when:
  - you changed the recording mode of the recorder.
  - you changed the control connection of RM-E700/RM-E500 and the recorder.

On the player
- Accurate compensation by frame is only possible with video equipment having the RC time code recording function such as CCD-V800/V800E/V801. Use the video equipment on the RC time code, not the HMS counter.
- Accurate compensation is not possible with video equipment lacking the RC time code recording function.
- When you use other counter than the RC time code such as HMS counter
  1 Before designating the Cut 1 point, when the frame with 00S 00F counter reading appears on the TV screen, set the player to the pause mode and press the COUNTER RESET button of the PLAYER section of the RM-E700/RM-E500.
  2 Before Operations 2 and 7, locate the same frame as above step 1 on the TV screen, set the player to the pause mode, and press the COUNTER RESET button of the PLAYER section of the RM-E700/RM-E500.

On the recorder and player
Accurate compensation is not possible with video equipment which produces noise on the picture in the playback pause mode or does not have the frame-by-frame playback function.

Timing Adjustment Flowchart

Preparation Insert the supplied demonstration tape in the video equipment for playback.

1 **Designate IN and OUT points for 5 Cuts.**

2 **Perform the program editing.**

3 **Playback the recorded tape and check the lag at the IN point.**

4 **Compensate for the lag at the IN point.**

5 **Playback the recorded tape and check the lag at the OUT point.**

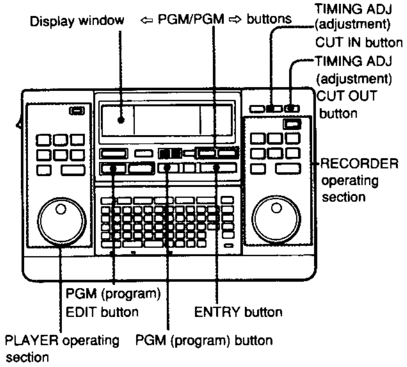
6 **Compensate for the lag at the OUT point.**

7 **Perform the program editing again using this tape. Check whether the IN and OUT points have been recorded accurately.**

Preparation

- Check that the connections of RM-E700/RM-E500, the unit for playback and the unit for recording are made properly. Insert a blank tape in the unit for recording. Make sure that the tape is ready to be recorded on.
- Insert the demonstration tape in the unit for playback and prepare the unit to playback. Press the ▷ (playback) button of the PLAYER section on the RM-E700/RM-E500. Playback the entire tape to get an idea of what data screen will appear on your TV or monitor for the Timing Adjustment.
- Rewind the tape to the beginning of the Timing Adjustment section.
- Have a pen or something to write with.

Buttons and Controls for Timing Adjustment


Display window
⇦ PGM/PGM ⇨ buttons
TIMING ADJ (adjustment) CUT IN button
TIMING ADJ (adjustment) CUT OUT button
RECORDER operating section
PGM (program) EDIT button
ENTRY button
PLAYER operating section
PGM (program) button

The illustration shows the RM-E700.

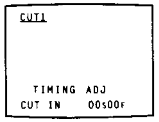
Operation

Operation 1 **Designate the IN and OUT points for 5 Cuts.**

1 **Press the ▷ button of the PLAYER section.**
The playback starts.

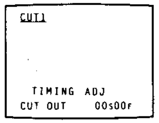
2 **Press the PGM button at once.**
You can start designating the Cuts.

3 **Using the operating buttons of the PLAYER section, locate the right data screen, and press the ENTRY button.**
The IN point of Cut 1 is designated.



TV or monitor

4 **Using the operating buttons of the PLAYER section, locate the right data screen, and press the ENTRY button.**
The OUT point of Cut 1 is designated.



TV or monitor

5 **Repeat steps 3 and 4 to designate the IN and OUT points for 5 Cuts.**

6 **After designating the OUT point of Cut 5, press the PGM button again.**

Operation

Operation 2 **Perform the program editing.**

1 **Set the recorder in the recording pause mode.**

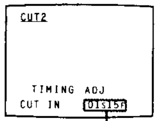
2 **Press the PGM EDIT button.**
The RM-E700/RM-E500 performs the program editing.

Note
Record on the tape for 15 seconds and then set the recorder to the recording pause mode. After that, press the PGM EDIT button. You can make the timing adjustment more accurately.

Operation 3 **Playback the recorded tape and check the lag at the IN point**

1 **Playback the recorded tape and write down the counter reading for the IN point (the scene where the recording actually starts) of each Cut. Convert them into frames*.**

Cut 1 _ _ S _ _ F=_ _ F
Cut 2 _ _ S _ _ F=_ _ F
Cut 3 _ _ S _ _ F=_ _ F
Cut 4 _ _ S _ _ F=_ _ F
Cut 5 _ _ S _ _ F=_ _ F



TV or monitor

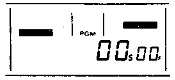
Write down this counter reading.

2 **Obtain the average of the 5 readings by adding them up and dividing by 5.**
Average reading _ _ _F=_ _ S _ _ F

* 1 second = 30 frames (NTSC)
1 second = 29 frames (PAL)

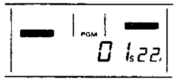
Operation 4 **Compensate for the lag at the IN point.**

1 **Press the TIMING ADJ CUT IN button.**
The following indication appears in the display window.



Display window

2 **Press the ⇦ PGM/PGM ⇨ button until the average reading for the IN POINT appears.**
Example: The average reading is 01 S 22 F.



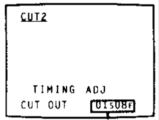
Display window

3 **Press the TIMING ADJ CUT IN button.**
The CUT IN and TIMING ADJ indications disappear from the display window.

Operation 5 **Rewind and playback the recorded tape and check the lag at the OUT point.**

1 **Playback the recorded tape and write down the reading for the OUT point (the scene where the recording actually stops) of each Cut. Convert them into frames*.**

Cut 1 _ _ S _ _ F=_ _ F
Cut 2 _ _ S _ _ F=_ _ F
Cut 3 _ _ S _ _ F=_ _ F
Cut 4 _ _ S _ _ F=_ _ F
Cut 5 _ _ S _ _ F=_ _ F



TV or monitor

Write down this counter reading.
(It may show a minus reading.)

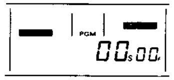
2 **Obtain the average of the 5 readings.**
Average reading _ _ _ F=_ _ S _ _ F

If the lag at the OUT point is more than 02S00F.

1 Perform Operation 6 and set the OUT point to 03S00F.
2 Perform Operation 5.
3 Add 03S00F and the average reading obtained in step 2.
4 Perform Operation 6 and set the OUT point to the data obtained in step 3.

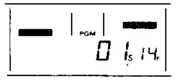
Operation 6 **Compensate for the lag at the OUT point.**

1 **Press the TIMING ADJ CUT OUT button.**
The following indication appears in the display window.



Display window

2 **Press the ⇦ PGM/PGM ⇨ button until the average reading for the OUT point appears.**
Example: The average reading is 01 S 14 F.



Display window

3 **Press the TIMING ADJ CUT OUT button.**
The CUT IN and TIMING ADJ indications disappear from the display window.

Operation 7

Perform program editing again using this tape. Check whether the IN and OUT points have been recorded accurately.

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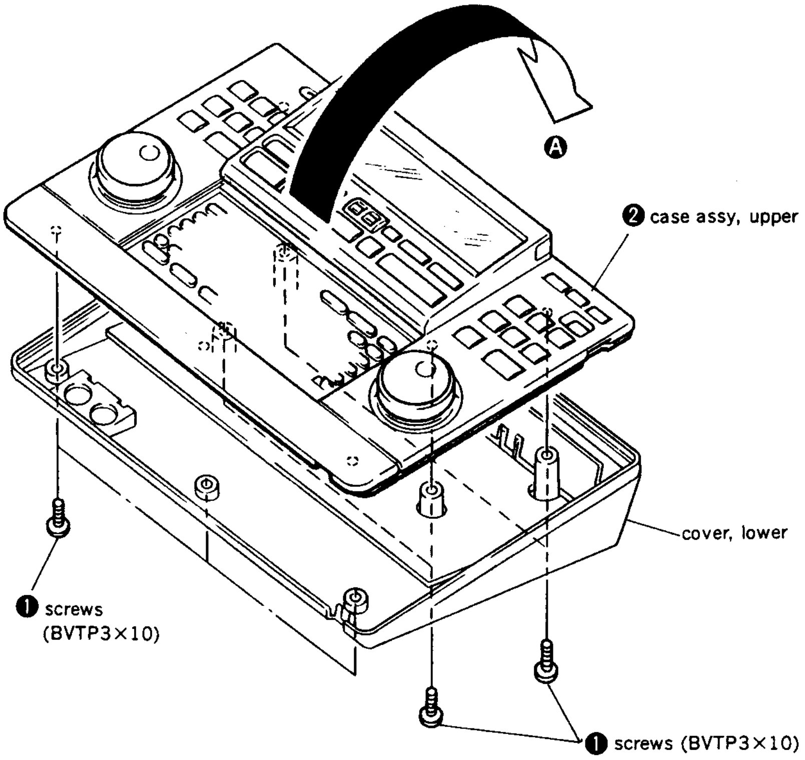
SECTION 2
DISASSEMBLY

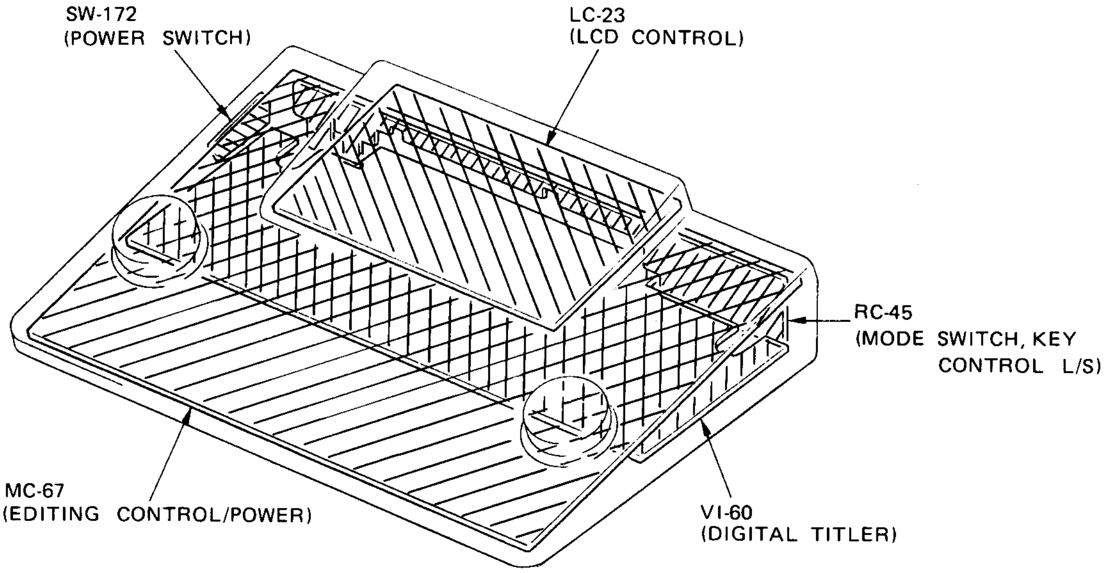
REMOVAL OF THE CASE ASSY, UPPER

1) Remove the seven screws❶.
2) Lift upper case assy❷ in the direction of arrow Ⓐ.

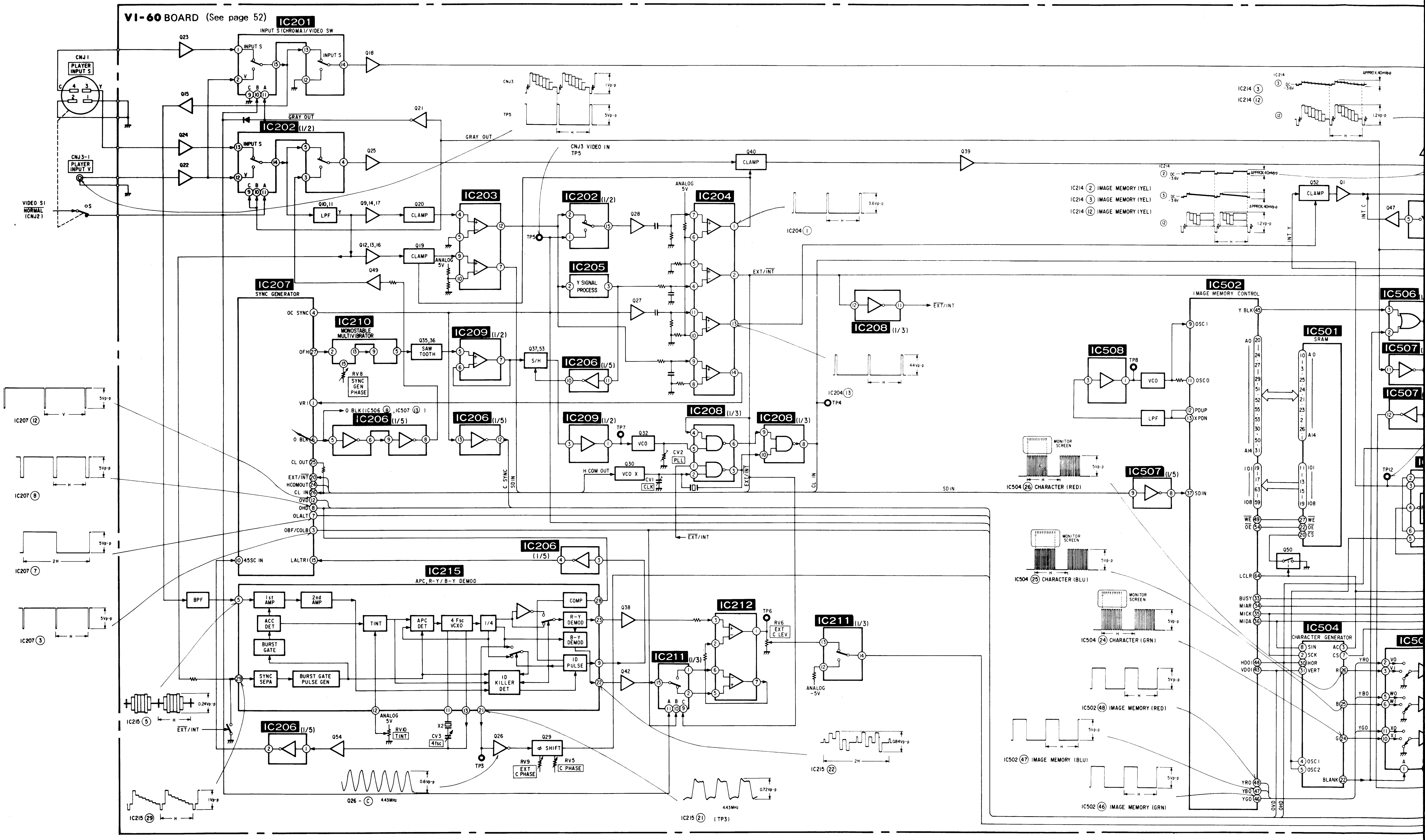

Ⓐ
❷ case assy, upper
cover, lower
❶ screws (BVTP3×10)
❶ screws (BVTP3×10)

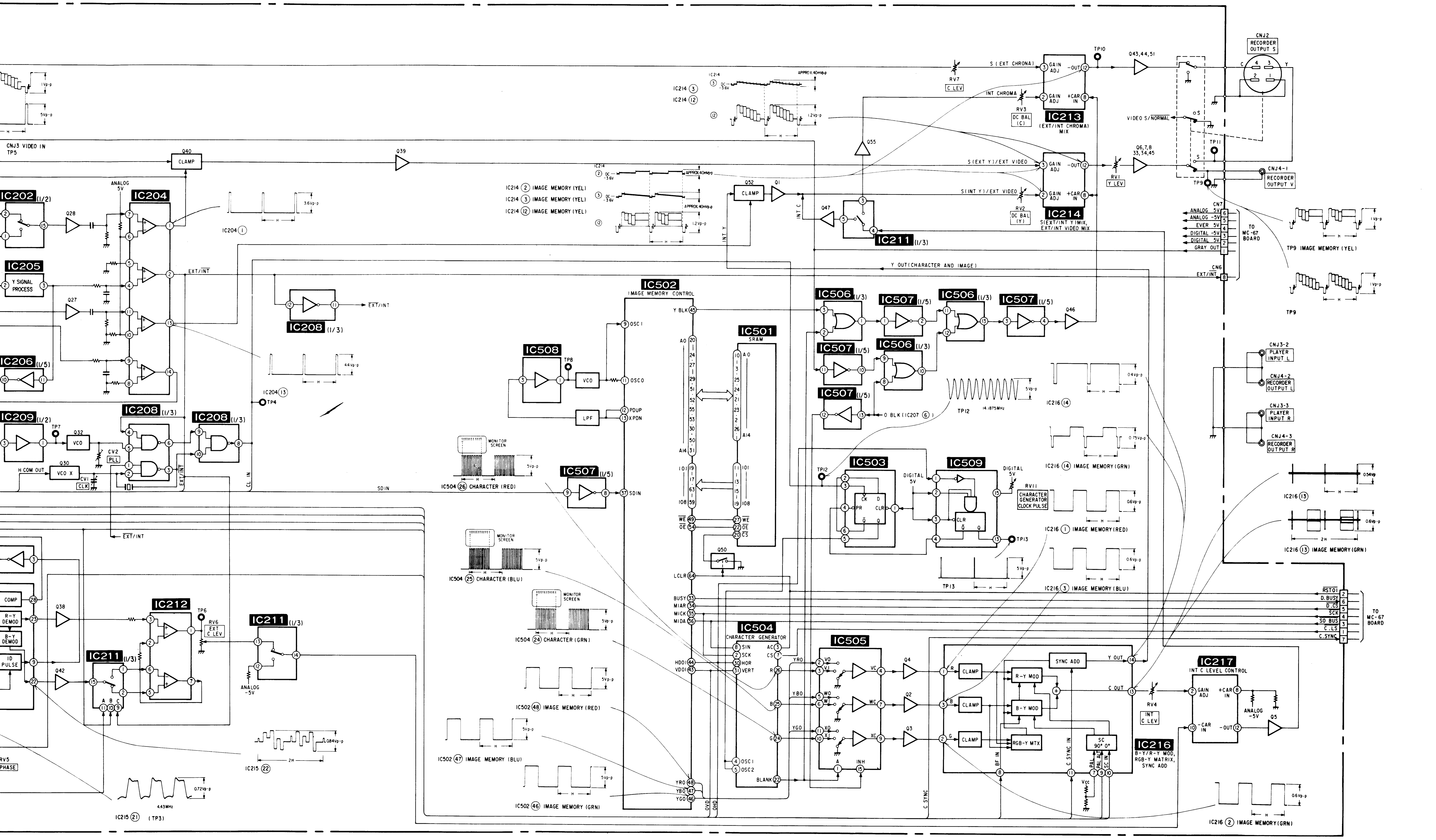
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

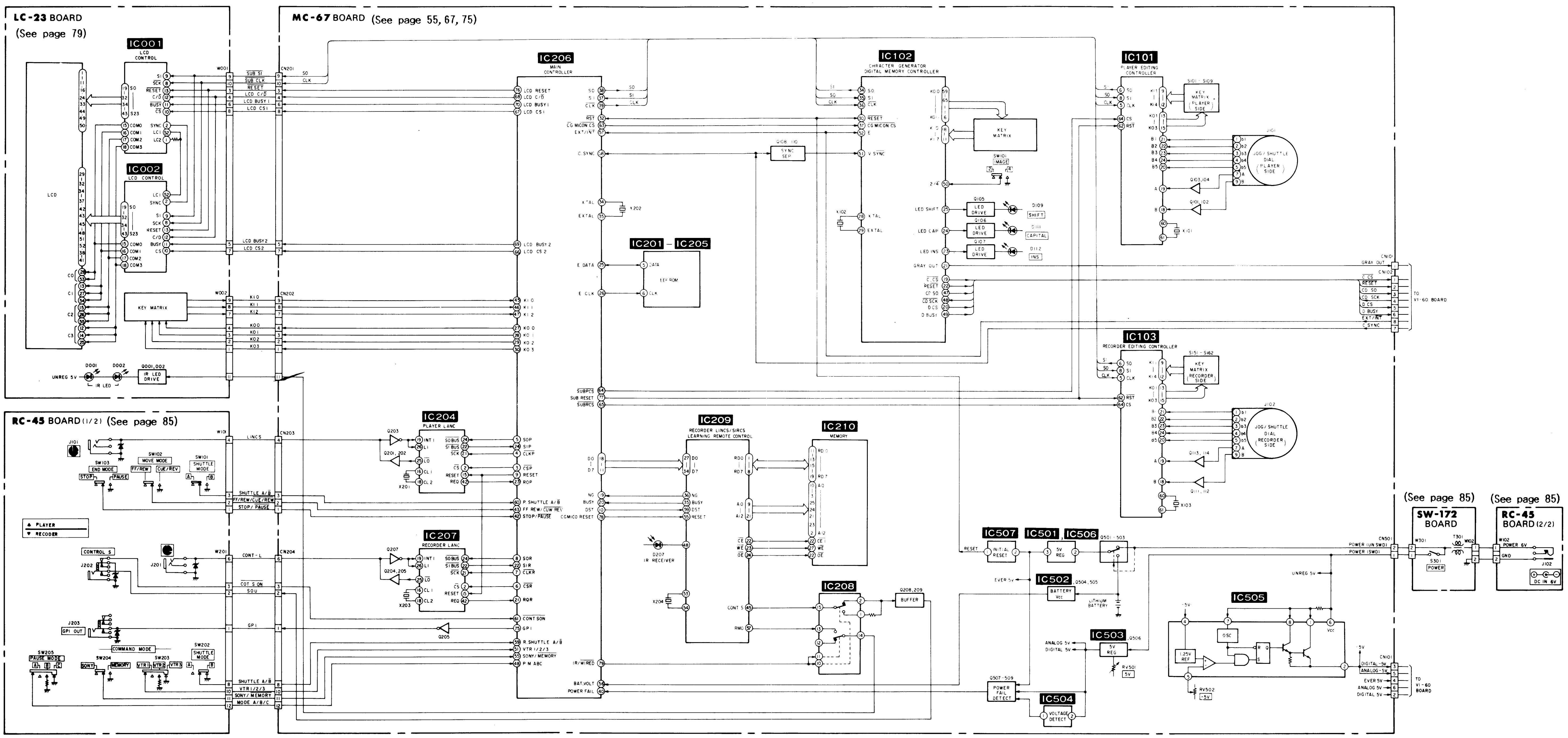

SW-172
(POWER SWITCH)
LC-23
(LCD CONTROL)
RC-45
(MODE SWITCH, KEY CONTROL L/S)
MC-67
(EDITING CONTROL/POWER)
VI-60
(DIGITAL TITLER)

3-2. TITLER BLOCK DIAGRAM


VI-60 BOARD (See page 52)
IC201
INPUT S(CHROMA)/VIDEO SW
INPUT S
Q23
Q18
Q15
Q21
GRAY OUT
IC202 (1/2)
Q24
Q22
Q25
CNJ1
PLAYER INPUT S
CNJ3-1
PLAYER INPUT V
VIDEO S1
NORMAL (CNJ2)
Q10,11
LPF
Q9,14,17
Q20
CLAMP
Q12,13,16
Q19
Q49
IC203
ANALOG 5V
CNJ3
TP5
1Vp-p
5Vp-p
CNJ3 VIDEO IN TP5
Q40
Q39
IC202 (1/2)
Q28
IC204
ANALOG 5V
IC205
Y SIGNAL PROCESS
Q27
EXT/INT
IC204 ①
3.6Vp-p
4.4Vp-p
IC204 ⑬
TP4
IC208 (1/3)
IC207
SYNC GENERATOR
OC SYNC
OFH
VR1
O BLK
CL OUT
EXT/INT
HCOMOUT
CL IN
OVD
OHD
OLALT
OBF/COLB
45SC IN
LALTR1
IC210
MONOSTABLE MULTIVIBRATOR
RV8
SYNC GEN PHASE
Q35,36
SAW TOOTH
IC209 (1/2)
Q37,53
S/H
IC206 (1/5)
O BLK (IC506 ⑧, IC507 ⑬)
IC209 (1/2)
TP7
Q32
VCO
CV2
PLL
H COM OUT
Q30
VCO X
CV1
CLK
IC208 (1/3)
C SYNC
SDIN
CL IN
IC207 ⑫
IC207 ⑧
IC207 ⑦
IC207 ③
5Vp-p
V
H
2H
IC215
APC, R-Y/B-Y DEMOD
BPF
1st AMP
2nd AMP
ACC DET
BURST GATE
TINT
APC DET
4 Fsc VCXO
1/4
COMP
R-Y DEMOD
B-Y DEMOD
ID PULSE
SYNC SEPA
BURST GATE PULSE GEN
ID KILLER DET
ANALOG 5V
RV10
TINT
X2
CV3
4fsc
Q38
Q42
IC212
TP6
RV6
EXT C LEV
IC211 (1/3)
IC211 (1/3)
ANALOG -5V
IC206 (1/5)
Q54
Q26
TP3
Q29
φ SHIFT
RV9
EXT C PHASE
RV5
C PHASE
EXT/INT
IC215 ⑤
0.24Vp-p
IC215 ㉙
1Vp-p
Q26 - Ⓒ 4.43MHz
0.6Vp-p
IC215 ㉑ (TP3)
0.72Vp-p
4.43MHz
IC215 ㉒
0.84Vp-p
IC214 ③
IC214 ⑫
DC -3.6V
APPROX.40mVp-p
1.2Vp-p
IC214 ② IMAGE MEMORY (YEL)
IC214 ③ IMAGE MEMORY (YEL)
IC214 ⑫ IMAGE MEMORY (YEL)
Q52
CLAMP
Q1
Q47
INT Y
INT C
IC502
IMAGE MEMORY CONTROL
Y BLK
OSC I
OSCO
PDUP
XPDN
SDIN
A0
A14
I01
I08
WE
OE
LCLR
BUSY
MIAR
MICK
MIDA
HD01
VD01
YR0
YB0
YG0
OVD
OHD
IC508
TP8
VCO
LPF
IC501
SRAM
CS
Q50
IC507 (1/5)
IC506
IC507
IC504
CHARACTER GENERATOR
SIN
SCK
HOR
VERT
AC
CS
R
B
G
OSC1
OSC2
BLANK
YRO
YBO
YGO
TP12
MONITOR SCREEN
IC504 ㉖ CHARACTER (RED)
IC504 ㉕ CHARACTER (BLU)
IC504 ㉔ CHARACTER (GRN)
IC502 ㊽ IMAGE MEMORY (RED)
IC502 ㊼ IMAGE MEMORY (BLU)
IC502 ㊻ IMAGE MEMORY (GRN)

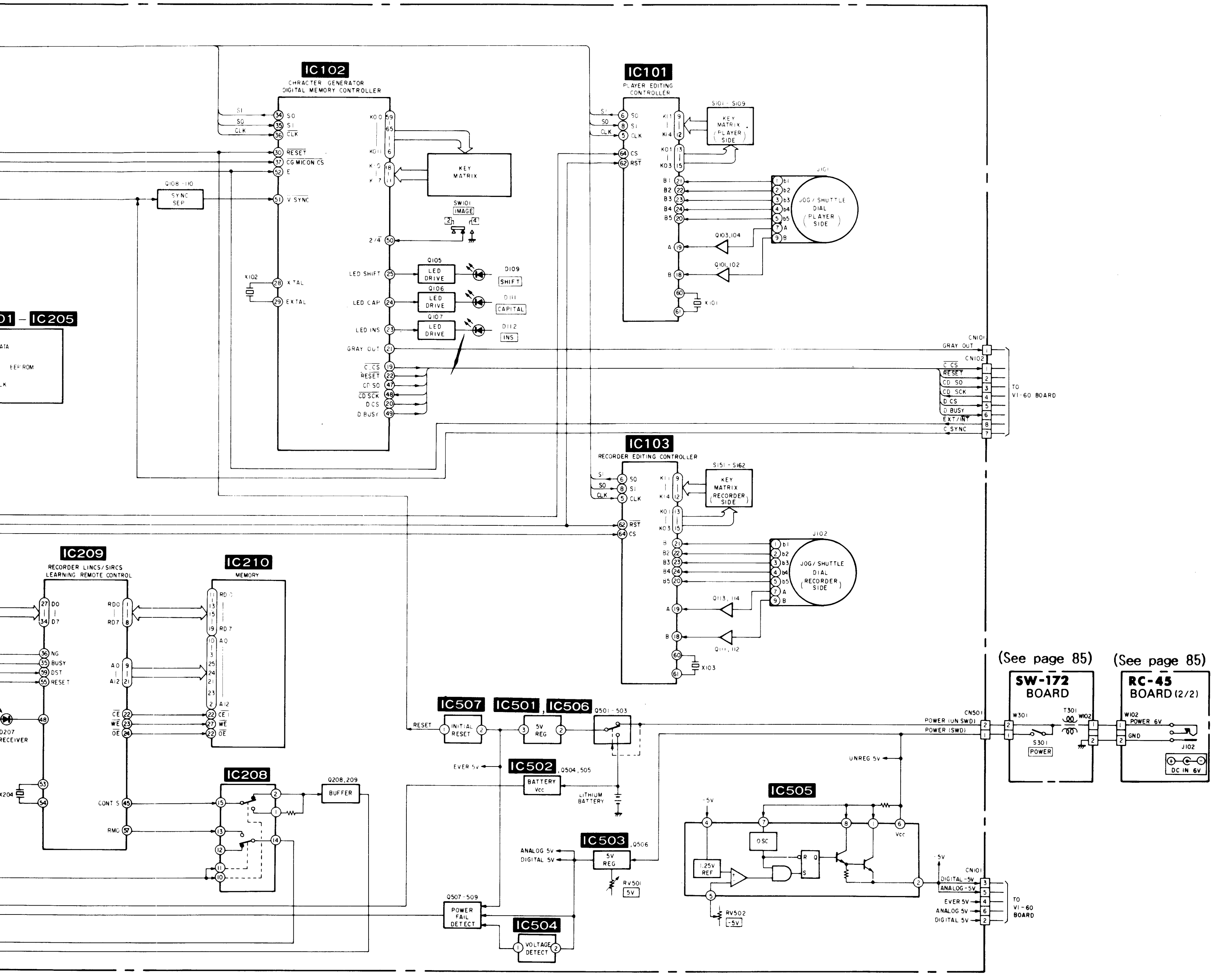

CNJ3 VIDEO IN
TP5
Q40
CLAMP
Q39
IC202 (1/2)
IC204
ANALOG 5V
Q28
IC204 ①
IC205
Y SIGNAL PROCESS
EXT/INT
Q27
IC208 (1/3)
EXT/INT
IC206 (1/5)
IC204 ⑬
TP4
IC209 (1/2)
TP7
Q32
VCO
CV2
PLL
H COM OUT
Q30
VCO X
CV1
CLK
IC208 (1/3)
IC208 (1/3)
EXT/INT
CL IN
SDIN
EXT/INT
COMP
R-Y DEMOD
B-Y DEMOD
ID PULSE
Q38
Q42
IC211 (1/3)
IC212
TP6
RV6
EXT C LEV
IC211 (1/3)
ANALOG -5V
RV5
PHASE
IC215 ㉒
IC215 ㉑ (TP3)
4.43MHz
0.72Vp-p
0.84Vp-p
2H
IC214 ② IMAGE MEMORY (YEL)
IC214 ③ IMAGE MEMORY (YEL)
IC214 ⑫ IMAGE MEMORY (YEL)
APPROX.40mVp-p
1.2Vp-p
IC214 ③
IC214 ⑫
IC502
IMAGE MEMORY CONTROL
IC508
TP8
VCO
LPF
OSC I
OSCO
PDUP
XPDN
Y BLK
A0
A14
IO1
IO8
WE
OE
LCLR
BUSY
MIAR
MICK
MIDA
HDO1
VDO1
YRO
YBO
YGO
IC501
SRAM
CS
Q50
IC507 (1/5)
MONITOR SCREEN
IC504 ㉖ CHARACTER (RED)
IC504 ㉕ CHARACTER (BLU)
IC504 ㉔ CHARACTER (GRN)
IC502 ㊽ IMAGE MEMORY (RED)
IC502 ㊼ IMAGE MEMORY (BLU)
IC502 ㊻ IMAGE MEMORY (GRN)
5Vp-p
IC504
CHARACTER GENERATOR
SIN
SCK
HOR
VERT
AC
OSC1
OSC2
BLANK
IC505
VO
V1
WO
W1
XO
X1
INH
Q4
Q2
Q3
YRO
YBO
YGO
Q52
CLAMP
Q1
INT C
INT Y
Q47
Q55
IC211 (1/3)
Y OUT (CHARACTER AND IMAGE)
IC506 (1/3)
IC507 (1/5)
IC506 (1/3)
IC507 (1/5)
Q46
IC507 (1/5)
IC506 (1/3)
IC507 (1/5)
0 BLK (IC207 ⑥)
TP12
14.1875MHz
IC503
TP12
DIGITAL 5V
CK
PR
CLR
IC509
DIGITAL 5V
RV11
CHARACTER GENERATOR CLOCK PULSE
TP13
RV7
C LEV
S (EXT CHRONA)
INT CHROMA
RV3
DC BAL (C)
IC213
(EXT/INT CHROMA) MIX
GAIN ADJ
-OUT
+CAR IN
TP10
Q43,44,51
S (EXT Y) / EXT VIDEO
S (INT Y) / EXT VIDEO
RV2
DC BAL (Y)
IC214
S (EXT/INT Y) MIX, EXT/INT VIDEO MIX
RV1
Y LEV
Q6,7,8 33,34,45
VIDEO S/NORMAL
TP11
TP9
CNJ2
RECORDER OUTPUT S
CNJ4-1
RECORDER OUTPUT V
CN7
ANALOG 5V
ANALOG -5V
EVER 5V
DIGITAL -5V
DIGITAL 5V
GRAY OUT
TO MC-67 BOARD
CN6
EXT/INT
TP9 IMAGE MEMORY (YEL)
TP9
1Vp-p
CNJ3-2 PLAYER INPUT L
CNJ4-2 RECORDER OUTPUT L
CNJ3-3 PLAYER INPUT R
CNJ4-3 RECORDER OUTPUT R
IC216 ⑭
IC216 ⑭ IMAGE MEMORY (GRN)
IC216 ① IMAGE MEMORY (RED)
IC216 ③ IMAGE MEMORY (BLU)
IC216 ⑬
IC216 ⑬ IMAGE MEMORY (GRN)
IC216 ② IMAGE MEMORY (GRN)
0.4Vp-p
0.75Vp-p
0.6Vp-p
0.54Vp
RSTO1
D.BUSY
D.CS
SCK
SO BUS
C.LS
C.SYNC
TO MC-67 BOARD
CLAMP
R-Y MOD
B-Y MOD
RGB-Y MTX
SYNC ADD
Y OUT
C OUT
SC 90° 0°
BF IN
C SYNC IN
PAL ALT
SC IN
Vcc
C SYNC
IC216
B-Y/R-Y MOD, RGB-Y MATRIX, SYNC ADD
RV4
INT C LEV
IC217
INT C LEVEL CONTROL
GAIN ADJ
+CAR IN
-CAR IN
-OUT
ANALOG -5V
Q5

3-3. EDITING CONTROLLER BLOCK DIAGRAM


LC-23 BOARD (See page 79)
IC001 LCD CONTROL
IC002 LCD CONTROL
LCD
KEY MATRIX
D001
D002
Q001,002 IR LED DRIVE
UNREG 5V
IR LED
W001
W002
MC-67 BOARD (See page 55, 67, 75)
CN201
CN202
CN203
CN204
IC206 MAIN CONTROLLER
IC102 CHARACTER GENERATOR DIGITAL MEMORY CONTROLLER
IC101 PLAYER EDITING CONTROLLER
IC103 RECORDER EDITING CONTROLLER
IC201 - IC205 EEP ROM
IC204 PLAYER LANC
IC207 RECORDER LANC
IC209 RECORDER LINCS/SIRCS LEARNING REMOTE CONTROL
IC210 MEMORY
IC208
Q208,209 BUFFER
Q108,110 SYNC SEP
KEY MATRIX
SW101 IMAGE
Q105 LED DRIVE
Q106 LED DRIVE
Q107 LED DRIVE
D109 SHIFT
D111 CAPITAL
D112 INS
S101 - S109 KEY MATRIX (PLAYER SIDE)
S151 - S162 KEY MATRIX (RECORDER SIDE)
J101 JOG/SHUTTLE DIAL (PLAYER SIDE)
J102 JOG/SHUTTLE DIAL (RECORDER SIDE)
Q103,104
Q101,102
Q113,114
Q111,112
X101
X102
X103
X201
X202
X203
X204
D207 IR RECEIVER
CN101
CN102
TO VI-60 BOARD
GRAY OUT
C.CS
RESET
CD SO
CD SCK
D.CS
D.BUSY
EXT/INT
C.SYNC
IC507 INITIAL RESET
IC501 5V REG
IC506
Q501 - 503
IC502 BATTERY Vcc
Q504,505
LITHIUM BATTERY
IC503 5V REG
Q506
RV501 5V
IC504 VOLTAGE DETECT
Q507 - 509 POWER FAIL DETECT
IC505
OSC
1.25V REF
RV502 -5V
EVER 5V
ANALOG 5V
DIGITAL 5V
UNREG 5V
-5V
Vcc
CN501
POWER (UN SWD)
POWER (SWD)
CN101
DIGITAL -5V
ANALOG -5V
EVER 5V
ANALOG 5V
DIGITAL 5V
TO VI-60 BOARD
(See page 85)
SW-172 BOARD
W301
T301
S301 POWER
W102
(See page 85)
RC-45 BOARD (2/2)
POWER 6V
GND
J102
DC IN 6V
RC-45 BOARD (1/2) (See page 85)
W101
W201
J101
SW103 END MODE
SW102 MOVE MODE
SW101 SHUTTLE MODE
STOP
PAUSE
FF/REW
CUE/REV
▲ PLAYER
▼ RECODER
CONTROL S
J202
J201
J203 GPI OUT
Q203
Q201,202
Q207
Q204,205
Q205
SW205 PAUSE MODE
SW204 MEMORY
SW203
SW202 SHUTTLE MODE
COMMAND MODE
SONY
VTR1
VTR2
VTR3
LINCS
SHUTTLE A/B
FF/REW/CUE/REW
STOP/PAUSE
CONT-L
COT S ON
SOU
GPI
SHUTTLE A/B
VTR1/2/3
SONY/MEMORY
MODE A/B/C
LCD BUSY2
LCD CS2
SUB SI
SUB CLK
RESET
LCD C/D
LCD BUSY1
LCD CS1
KI0
KI1
KI2
KO0
KO1
KO2
KO3
SUBPCS
SUB RESET
SUBRCS
IR/WIRED
BAT.VOLT
POWER FAIL
P SHUTTLE A/B
FF REW/CUW REV
STOP/PAUSE
CGMICO RESET
CONT SON
R SHUTTLE A/B
VTR 1/2/3
SONY/MEMORY
P M ABC
SOP
SIP
CLKP
CSP
RESET
RQP
SOR
SIR
CLKR
CSR
RQR

3-4. MA
PO

Pin No
1
2
3
4
5
6
7
8
9
10
11 | 18
19
20
21
22
23
24
25
26
27 | 30
31
32
33
34
35
36
37
38



IC102
CHARACTER GENERATOR DIGITAL MEMORY CONTROLLER
KEY MATRIX
SW101 IMAGE
LED DRIVE
D109 SHIFT
D111 CAPITAL
D112 INS
IC101
PLAYER EDITING CONTROLLER
KEY MATRIX (PLAYER SIDE)
JOG/SHUTTLE DIAL (PLAYER SIDE)
IC205
SYNC SEP
IC103
RECORDER EDITING CONTROLLER
KEY MATRIX (RECORDER SIDE)
JOG/SHUTTLE DIAL (RECORDER SIDE)
IC209
RECORDER LINCS/SIRCS LEARNING REMOTE CONTROL
IC210
MEMORY
IC208
BUFFER
IC507
INITIAL RESET
IC501
5V REG
IC506
IC502
BATTERY
LITHIUM BATTERY
IC503
5V REG
IC504
VOLTAGE DETECT
POWER FAIL DETECT
IC505
OSC
RV501
RV502
TO VI-60 BOARD
(See page 85)
SW-172 BOARD
S301 POWER
(See page 85)
RC-45 BOARD (2/2)
POWER 6V
GND
J102
DC IN 6V

3-4. MAIN MICROCOMPUTER (CXP80116: IC206 on MC-67 Board) PORT FUNCTIONS AND INPUT/OUTPUT LEVEL

Pin No.	Signal	I/O	Function
1	————	–	Not used.
2	————	–	Not used.
3	$\overline{\text{CSP}}$	O	Chip select signal to LANC IC (IC204 on MC-67 board) of PB side.
4	$\overline{\text{CLKP}}$	O	Clock signal to LANC IC of PB side.
5	SOP	O	Serial OUT signal to LANC IC of PB side.
6	$\overline{\text{CSR}}$	O	Chip select signal to LANC IC (IC207 on MC-67 board) of REC side.
7	$\overline{\text{CLKR}}$	O	Clock signal to LANC IC of REC side.
8	SOR	O	Serial OUT signal to LANC IC of REC side.
9	RESET	O	Reset signal to LANC IC of REC/PB.
10	DST	O	DST signal to SIRCS/learning microcomputer (IC209 on MC-67 board).
11 | 18	D7 | D0	O | O	Data signal to SIRCS/learning microcomputer.
19	NG	I	NG signal from SIRCS/learning microcomputer.
20	BUSY	I	BUSY signal from SIRCS/learning microcomputer.
21	RQR	I	Request signal from LANC IC of REC side.
22	SIR	I	Serial IN signal from LANC IC of REC side.
23	RQP	I	Request signal from LANC IC of PB side.
24	SIP	I	Serial IN signal from LANC IC of PB side.
25	E DATA	I/O	Input/output of data signal with EEPROM (IC201–203, 205 on MC-67 board).
26	E CLK	O	Clock signal to EEPROM.
27 | 30	KO0 | KO3	O | O	Key scan signal output.
31	MP	I	Microprocessor mode select terminal, H: Microprocessor mode.
32	$\overline{\text{RST}}$	I	Reset signal input.
33	Vss	–	GND
34	XTAL	O	Crystal connecting terminal for system clock oscillation.
35	EXTAL	I	
36	R LANC/$\overline{\text{LANC+}}$	I	Discrimination signal from NORMAL/$\overline{\text{PRECISION L}}$ SW on video recording side.
37	SI	I	Serial signal from submicrocomputer (IC101, 103 on MC-67 board), CG control microcomputer (IC102 on MC-67 board), LCD driver of IC (IC001, 002 on LC-23 board).
38	SO	O	Serial signals to submicrocomputer, CG control microcomputer and LCD driver IC.

Pin No.	Signal	I/O	Function
39	CLK	O	Clock signals to submicrocomputer, CG control microcomputer and LCD driver IC.
40	P FAIL	I	L→H: Fall a sleep, H L: Get up
41	P LANC/LANC+	I	Discrimination signal from NORMAL/PRECISION L SW on video recording side.
42	STOP/PAUSE	I	Discrimination signal from STOP/PAUSE SW.
43	FF/CUE	I	Discrimination signal from FF•REW/CUE•REV SW.
44	———	–	Not used.
45	KI0	I	Key scan signal input.
46	KI1	I	Key scan signal input.
47	KI2	I	Key scan signal input.
48	PM A/B/C	I	A: 5V, B: 2.5V and C: 0V from PAUSE MODE SW.
49	NT/PAL	I	NTSC: 5V and PAL: 0V from NTSC/PAL discrimination.
50	500/700	I	E500: 5V and E700: 0V from RM-E500/E700 discrimination.
51	VTR 1/2/3	I	1: 5V, 2: 2.5V and 3: 0V from VTR1/2/3 SW.
52	AVss	–	GND terminal of A/D converter.
53	AVref	I	Reference voltage input terminal of A/D converter.
54	AVdd	–	Positive power output terminal of A/D converter.
55	SONY/MEMORY	I	Discrimination signal from SONY/MEMORY SW.
56	BAT. VOL	I	Voltage drop detection of lithium cell, Normal: H, Time in low: L.
57	EXT/INT	I	External synchronism: H, Internal synchronism: L.
58	C. SYNC	I	Composit SYNC input.
59	R. SHUTTLE A/B	I	A: 5V and B: 0V from shuttle A/B SW on video recording side.
60	P. SHUTTLE A/B	I	A: 5V and B: 0V from shuttle A/B SW on playback side.
61	CONT S ON	I	L when plug sticks in CONTROL S terminal.
62	R LANC ON	I	Not used.
63	CGMICON CS	O	Chip select signal to CG microcomputer (IC102 on MC-67 board).
64	SUB R CS	O	Chip select signal to submicrocomputer on video recording side.
65	SUB P CS	O	Chip select signal to submicrocomputer on playback side.
66	LCD CS2	O	Chip select signal to LCD driver IC (2) (IC002 on LC-23 board).
67	LCD CS1	O	Chip select signal to LCD driver IC (1) (IC001 on LC-23 board).
68	LCD C/D	O	Command/data switching signal to LCD driver IC.
69	LCD BUSY2	O	Busy signal from LCD driver IC (2).
70	LCD BUSY1	O	Busy signal from LCD driver IC (1).
71	NMI	I	None-maskable interupt request terminal of active falling edge.
72	Vdd	–	Possitive power output terminal.

Pin No.	Signal	I/O	Function
73	Vss	–	GND terminal.
74	————	–	Not used.
75	GPI	O	Output signal (HIGH active) to GPI terminal.
76	LCD RESET	O	Reset signal for LCD driver.
77	SUB RESET	O	Reset signal for submicrocomputer.
78	LRN RESET	O	Reset signal for learning microcomputer.
79	IR/$\overline{\text{WIRED}}$	O	Infrared rays output (H)/Control S output (L) selection.
80	————	O	Not used.

3-5. CG CONTROL MICROCOMPUTER (CXP80316: IC102 on MC-67 Board) PORT FUNCTIONS AND INPUT/OUTPUT LEVEL

Pin No.	Signal	I/O	Function
1 | 10	KO6 | KO15	O | O	Key scan signal output.
11 | 18	KI7 | KI0	I | I	Key scan signal input.
19	$\overline{\text{C. CS}}$	O	Chip select signal to CG IC (IC504 on VI-60 board).
20	D. CS	O	Chip select signal to digital memory control IC (IC502 on VI-60 board).
21	GRAYOUT	O	Gray back signal output.
22	$\overline{\text{RESET}}$	O	Reset signal to CG/digital memory control IC.
23	LEDINS	O	Drive signal output of INS LED.
24	LEDCAP	O	Drive signal output of CAPITAL LED.
25	LEDSHIFT	O	Drive signal output of SHIFT LED.
26	Vss	–	GND terminal.
27	———	O	Notused.
28	XTAL	O	Crystal connection terminal for system clock oscillation.
29	EXTAL	I	
30	$\overline{\text{RESET}}$	I	Reset signal input.
31	———	O	Not used.
32	———	O	Not used.
33	———	I	Not used.
34	SO	O	Serial out to main microcomputer (IC206 on MC-67 board).
35	SI	I	Serial in from main microcomputer.
36	$\overline{\text{CLK}}$	O	Serial clock from main microcomputer.
37	$\overline{\text{CGMICON CS}}$	I	Serial chip select from main microcomputer.
38	NT/$\overline{\text{PAL}}$	I	NTSC/$\overline{\text{PAL}}$ select signal.
39 | 46	—— | ——	O | O	Not used.
47	CD SO	O	Serial out to CG/digital memory control IC.
48	$\overline{\text{CD SCK}}$	O	Serial clock to CG/digital memory control IC.
49	D BUSY	I	Busy signal from digital memory control IC.
50	2/$\overline{4}$	I	Signal from digital memory 2/4 changeover switch.
51	V SYNC	I	V SYNC input.
52	EXT/$\overline{\text{INT}}$	I	Discrimination input signal on presence of external signal output.
53	P.FAIL	I	L→H: Fall a sleep, H→L: Get up
54	———	O	Not used.

Pin No.	Signal	I/O	Function
55	MP	I	Microprocessor mode select terminal. H: Microprocessor mode.
56	———	–	Not used.
57	Vdd	–	Possitive power output terminal.
58	Vss	–	GND terminal.
59 | 64	KO0 | KO5	O | O	Key scan signal output.

3-6. SIRCS/LEARNING MICROCOMPUTER (CXP5116: IC209 on MC-67 Board)
PORT FUNCTIONS AND INPUT/OUTPUT LEVEL

Pin No.	Signal	I/O	Function
1 | 8	RD0 | RD7	I/O | I/O	Data line with S-RAM (IC210 on MC-67 board).
9 | 21	A0 | A12	O | O	Address line to S-RAM.
22	$\overline{\text{CE}}$	O	Chip enable to S-RAM.
23	$\overline{\text{WE}}$	O	Write enable to S-RAM.
24	$\overline{\text{OE}}$	O	Output enable to S-RAM.
25	Vss	–	GND terminal.
26	————	–	Not used.
27 | 34	D0 | D7	I | I	Data line from main microcomputer (IC206 on MC-67 board).
35	BUSY	O	Busy signal to main microcomputer.
36	NG	O	NG signal to main microcomputer.
37 | 44	—— | ——	– | –	Not used.
45	CONT S	O	Control S signal output.
46	————	–	Not used.
47	AMP O	O	Analog amplifier output.
48	AMP I	I	Analog amplifier input.
49	$\overline{\text{STOP}}$	I	External stop. Not used.
50	————	–	Not used.
51	————	–	Not used.
52	————	–	Not used.
53	XTAL	O	Crystal connecting terminal for system clock oscillation.
54	EXTAL	I	
55	$\overline{\text{RESET}}$	I	Reset signal input.
56	————	–	Not used.
57	RMO	O	Remote control output.
58	VDD	I	Possitive power output terminal.
59	DST	I	Data strobe.
60	RMI	I	Remote control input.
61 | 64	—— | ——	– | –	Not used.

3-7. SUBMICROCOMPUTER (CXP5084H: IC101, 103 on MC-67 Board)
PORT FUNCTIONS AND INPUT/OUTPUT LEVEL

Pin No.	Signal	I/O	Function
1 | 4	—— | ——	– | –	Not used.
5	SCK	I	Serial clock signal from main microcomputer (IC206 on MC-67 board).
6	SO	O	Serial out signal to main microcomputer.
7	————	I/O	Not used.
8	SI	I	Serial in signal from main microcomputer.
9 | 12	KI1 | KI4	I | I	Key scan signal input.
13	KO1	O	Key scan signal output.
14	KO2	O	
15	KO3	O	
16	————	O	Not used.
17	————	O	Not used.
18	B	I	Jog signal B.
19	A	I	Jog signal A.
20	B5	I	Shuttle signal 5.
21	B1	I	Shuttle signal 1.
22	B2	I	Shuttle signal 2.
23	B3	I	Shuttle signal 3.
24	B4	I	Shuttle signal 4.
25	Vss	–	GND terminal.
26 | 57	—— | ——	– | –	Not used
58	VDD	–	Possitive power output terminal.
59	————	–	Not used.
60	XTAL	O	Crystal connecting terminal for system clock oscillation.
61	EXTAL	I	
62	$\overline{\text{RST}}$	I	Reset signal input.
63	————	I	Not used.
64	CS	I	Chip select signal from main microcomputer.

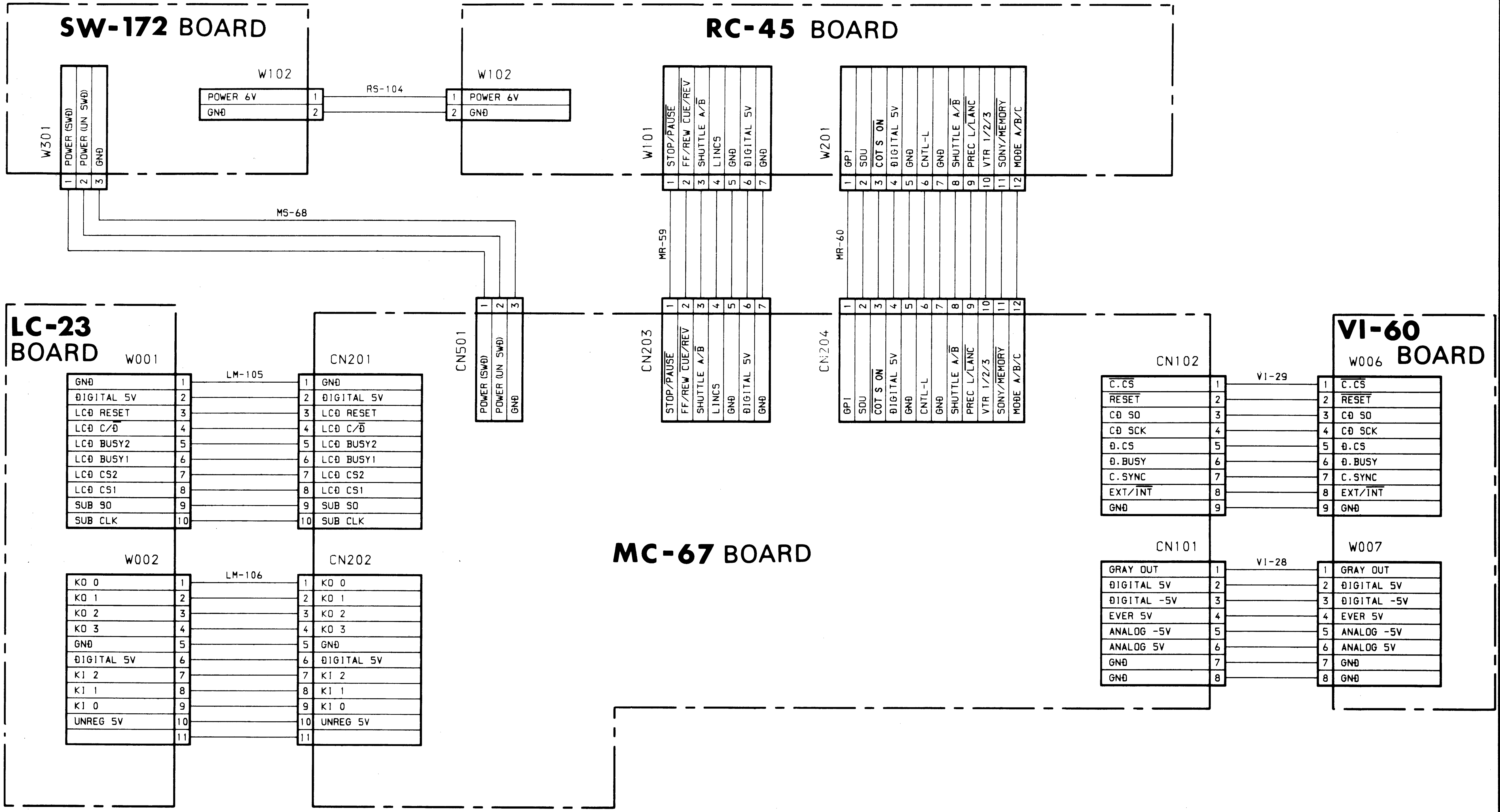
r (IC206 on MC-67 board).

k oscillation.

r.

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

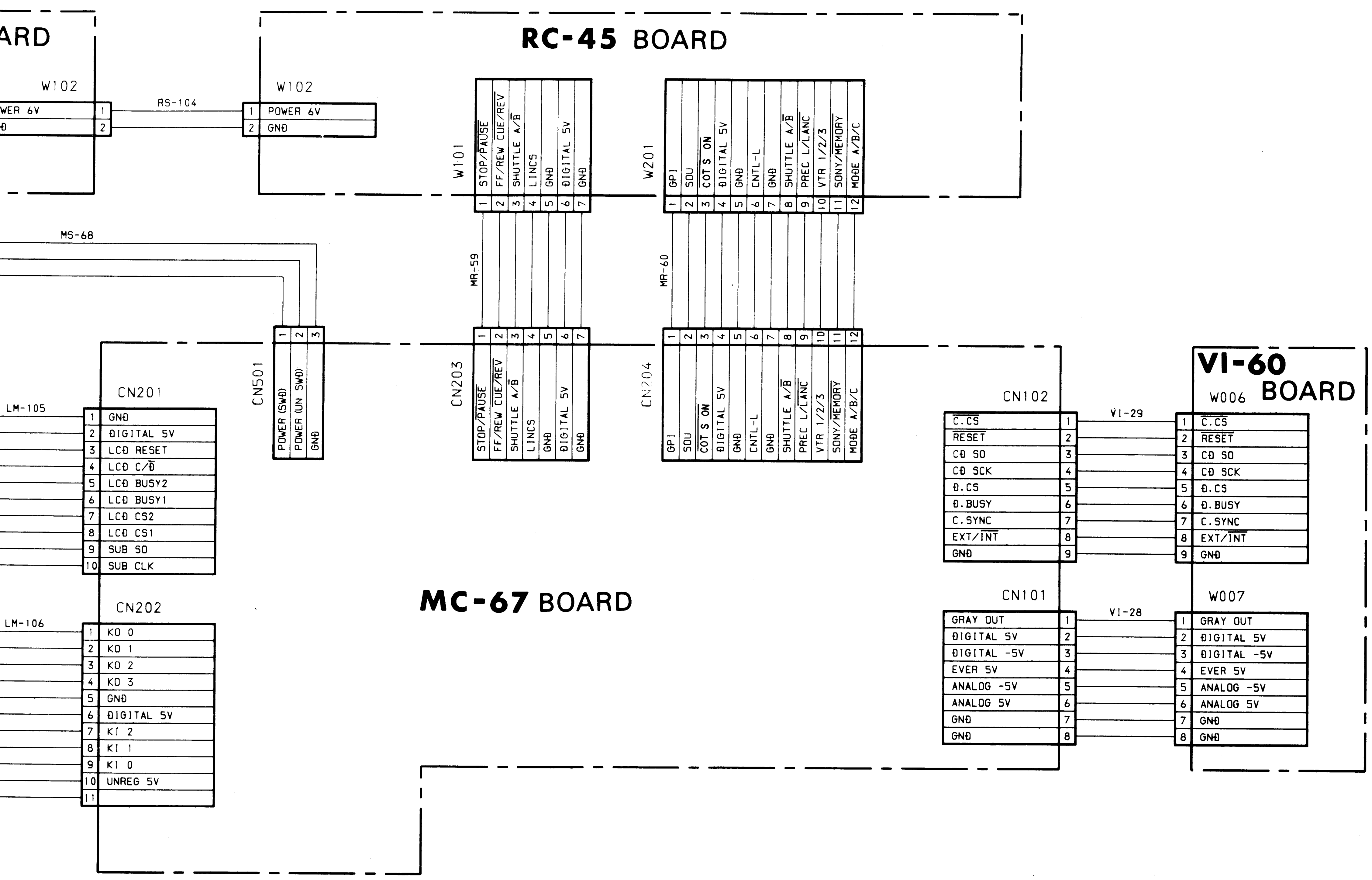
4-1. FRAME SCHEMATIC DIAGRAM



SW-172 BOARD
W301
1 POWER (SWD)
2 POWER (UN SWD)
3 GND
W102
1 POWER 6V
2 GND
RS-104
RC-45 BOARD
W102
1 POWER 6V
2 GND
W101
1 STOP/PAUSE
2 FF/REW CUE/REV
3 SHUTTLE A/B
4 LINCS
5 GND
6 DIGITAL 5V
7 GND
W201
1 GPI
2 SOU
3 COT S ON
4 DIGITAL 5V
5 GND
6 CNTL-L
7 GND
8 SHUTTLE A/B
9 PREC L/LANC
10 VTR 1/2/3
11 SONY/MEMORY
12 MODE A/B/C
MS-68
MR-59
MR-60
CN501
1 POWER (SWD)
2 POWER (UN SWD)
3 GND
CN203
1 STOP/PAUSE
2 FF/REW CUE/REV
3 SHUTTLE A/B
4 LINCS
5 GND
6 DIGITAL 5V
7 GND
CN204
1 GPI
2 SOU
3 COT S ON
4 DIGITAL 5V
5 GND
6 CNTL-L
7 GND
8 SHUTTLE A/B
9 PREC L/LANC
10 VTR 1/2/3
11 SONY/MEMORY
12 MODE A/B/C
LC-23 BOARD
W001
1 GND
2 DIGITAL 5V
3 LCD RESET
4 LCD C/D
5 LCD BUSY2
6 LCD BUSY1
7 LCD CS2
8 LCD CS1
9 SUB SO
10 SUB CLK
LM-105
CN201
1 GND
2 DIGITAL 5V
3 LCD RESET
4 LCD C/D
5 LCD BUSY2
6 LCD BUSY1
7 LCD CS2
8 LCD CS1
9 SUB SO
10 SUB CLK
W002
1 KO 0
2 KO 1
3 KO 2
4 KO 3
5 GND
6 DIGITAL 5V
7 KI 2
8 KI 1
9 KI 0
10 UNREG 5V
11
LM-106
CN202
1 KO 0
2 KO 1
3 KO 2
4 KO 3
5 GND
6 DIGITAL 5V
7 KI 2
8 KI 1
9 KI 0
10 UNREG 5V
11
MC-67 BOARD
CN102
1 C.CS
2 RESET
3 CD SO
4 CD SCK
5 D.CS
6 D.BUSY
7 C.SYNC
8 EXT/INT
9 GND
VI-29
VI-60 BOARD
W006
1 C.CS
2 RESET
3 CD SO
4 CD SCK
5 D.CS
6 D.BUSY
7 C.SYNC
8 EXT/INT
9 GND
CN101
1 GRAY OUT
2 DIGITAL 5V
3 DIGITAL -5V
4 EVER 5V
5 ANALOG -5V
6 ANALOG 5V
7 GND
8 GND
VI-28
W007
1 GRAY OUT
2 DIGITAL 5V
3 DIGITAL -5V
4 EVER 5V
5 ANALOG -5V
6 ANALOG 5V
7 GND
8 GND

SECTION 4
NG BOARDS AND SCHEMATIC DIAGRAMS

GRAM


ARD
W102
WER 6V
D
1
2
RS-104
W102
1 POWER 6V
2 GND
RC-45 BOARD
W101
1 STOP/PAUSE
2 FF/REW CUE/REV
3 SHUTTLE A/B
4 LINCS
5 GND
6 DIGITAL 5V
7 GND
W201
1 GPI
2 SOU
3 COT S ON
4 DIGITAL 5V
5 GND
6 CNTL-L
7 GND
8 SHUTTLE A/B
9 PREC L/LANC
10 VTR 1/2/3
11 SONY/MEMORY
12 MODE A/B/C
MS-68
MR-59
MR-60
CN501
1 POWER (SWD)
2 POWER (UN SWD)
3 GND
CN203
1 STOP/PAUSE
2 FF/REW CUE/REV
3 SHUTTLE A/B
4 LINCS
5 GND
6 DIGITAL 5V
7 GND
CN204
1 GPI
2 SOU
3 COT S ON
4 DIGITAL 5V
5 GND
6 CNTL-L
7 GND
8 SHUTTLE A/B
9 PREC L/LANC
10 VTR 1/2/3
11 SONY/MEMORY
12 MODE A/B/C
LM-105
CN201
1 GND
2 DIGITAL 5V
3 LCD RESET
4 LCD C/D
5 LCD BUSY2
6 LCD BUSY1
7 LCD CS2
8 LCD CS1
9 SUB SO
10 SUB CLK
LM-106
CN202
1 KO 0
2 KO 1
3 KO 2
4 KO 3
5 GND
6 DIGITAL 5V
7 KI 2
8 KI 1
9 KI 0
10 UNREG 5V
11
MC-67 BOARD
CN102
1 C.CS
2 RESET
3 CD SO
4 CD SCK
5 D.CS
6 D.BUSY
7 C.SYNC
8 EXT/INT
9 GND
VI-29
VI-60 BOARD
W006
1 C.CS
2 RESET
3 CD SO
4 CD SCK
5 D.CS
6 D.BUSY
7 C.SYNC
8 EXT/INT
9 GND
CN101
1 GRAY OUT
2 DIGITAL 5V
3 DIGITAL -5V
4 EVER 5V
5 ANALOG -5V
6 ANALOG 5V
7 GND
8 GND
VI-28
W007
1 GRAY OUT
2 DIGITAL 5V
3 DIGITAL -5V
4 EVER 5V
5 ANALOG -5V
6 ANALOG 5V
7 GND
8 GND

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- ○— : indicated a lead wire mounted on the component side.
- ● : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side. *
- Circled numbers refer to waveforms.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagrams:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair. *
- ━ : B+ line. *
- ╍ : B– line. *
- ⇨ : IN/OUT direction of B line (+, –). *
- Circled numbers refer to waveforms. *
- Voltage are dc between ground and measurement points. *
- Readings are taken with a color-bar signal playback. *
- Readings are taken with a digital multimeter (DC 10MΩ). *
- Voltage are taken with a VOM (input impedance 10MΩ). *
- Voltage variations may be noted due to normal production tolerances. *
- * : **Indicates by the color red.**

When indicating parts by reference number, please include the board name.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

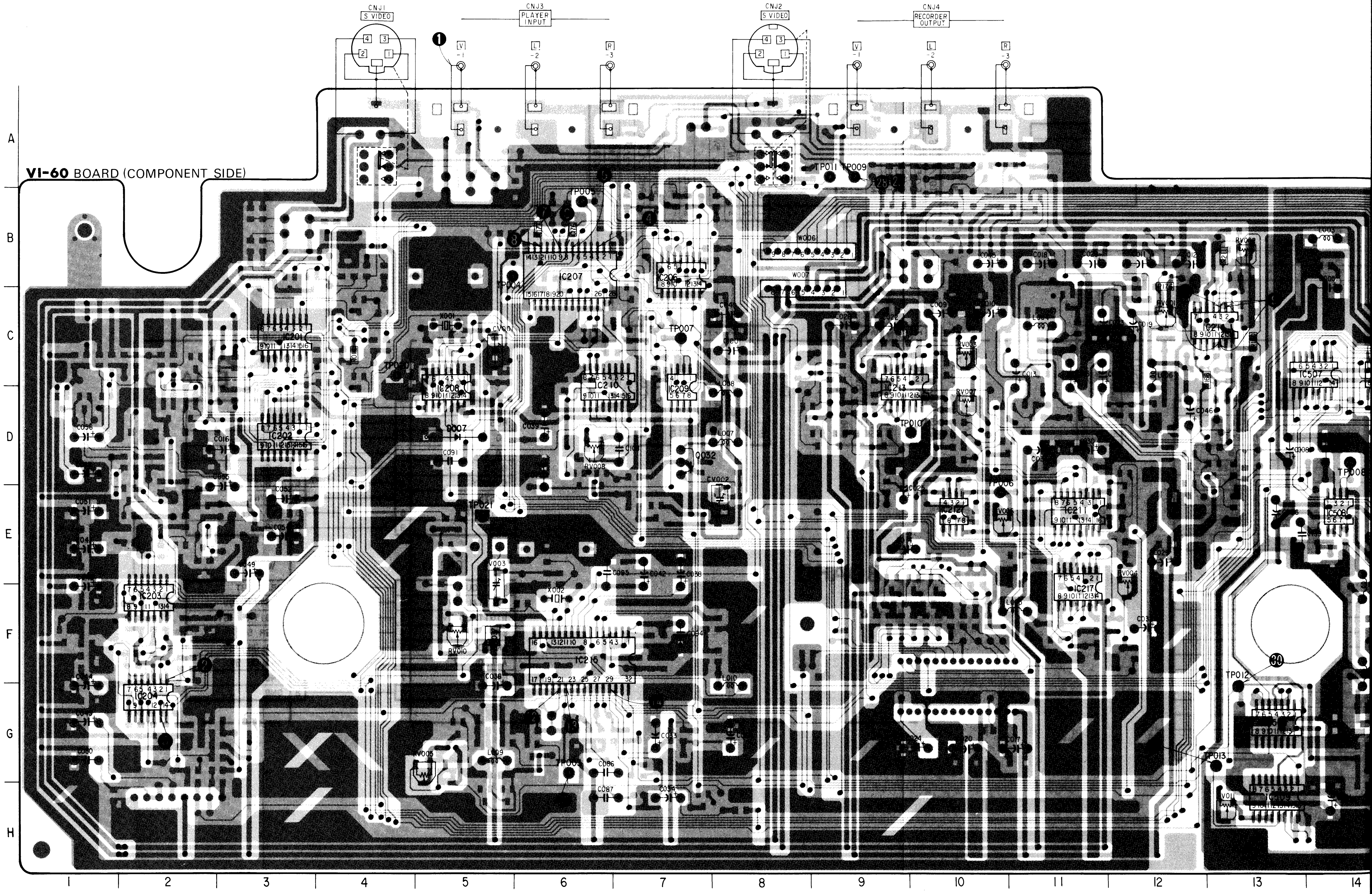
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

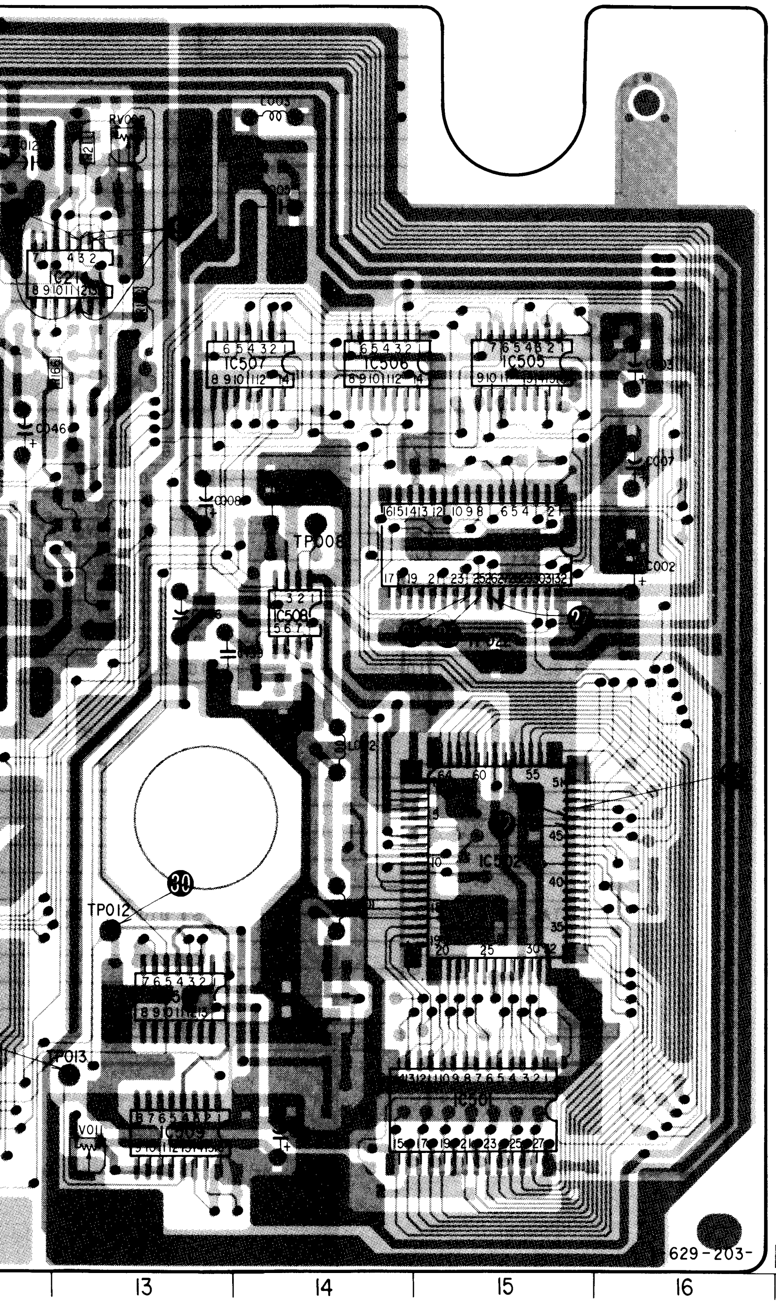
VI-60 (DIGITAL TITLER) PRINTED WIRING BOARD

–Ref. No. VI-60 Board: 1,000 series–

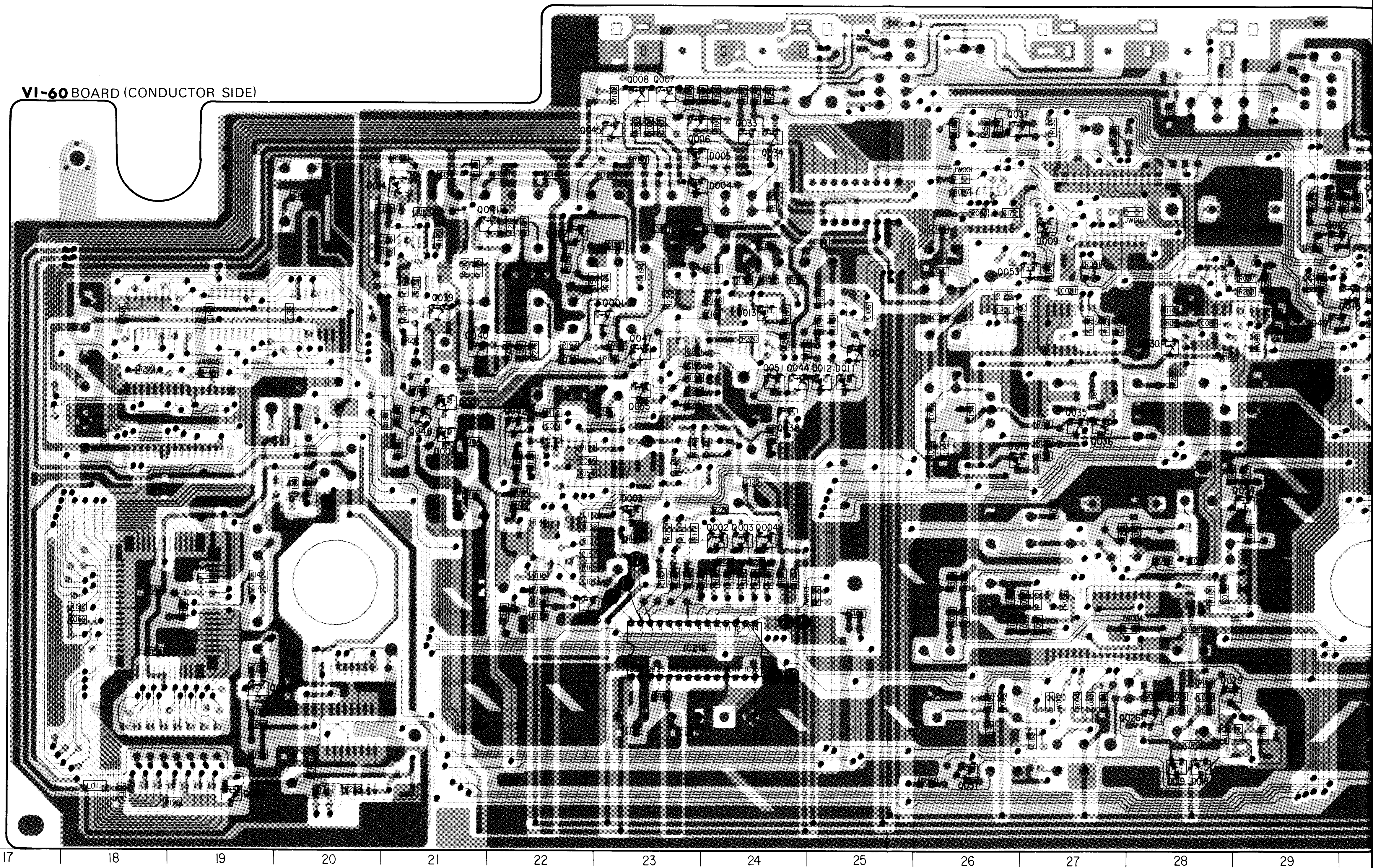
VI-60 BOARD

CN006	B-8
CN007	C-8
CV001	C-5
CV002	E-8
CV003	E-5
CV004	G-14
D001	D-21
D002	E-21
D003	E-23
D004	B-24
D005	B-24
D006	E-31
D008	D-32
D009	C-27
D010	E-27
D011	D-25
D012	D-25
D013	C-24
D014	B-21
D016	C-31
D017	C-29
D018	H-28
D019	H-28
IC201	C-3
IC202	D-3
IC203	F-2
IC204	G-2
IC205	H-31
IC206	B-7
IC207	B-6
IC208	D-5
IC209	D-7
IC210	D-7
IC211	E-11
IC212	E-10
IC213	C-9
IC214	C-13
IC215	F-6
IC216	F-23
IC217	F-11
IC501	G-15
IC502	F-15
IC503	G-13
IC504	D-15
IC505	C-15
IC506	C-14
IC507	C-14
IC508	E-14
IC509	H-13
Q001	C-23
Q002	E-24
Q003	E-24
Q004	E-24
Q005	F-22
Q006	B-24
Q007	A-23
Q008	A-23
Q009	E-32
Q010	D-31
Q011	D-32
Q012	E-31
Q013	E-31
Q014	D-32
Q015	D-31
Q016	E-31
Q017	E-32
Q018	C-30
Q019	F-31
Q020	E-32
Q021	C-31
Q022	C-30
Q023	C-30
Q024	C-30
Q025	D-32
Q026	G-28
Q027	G-31
Q028	F-32
Q029	G-29
Q031	H-26
Q032	D-7
Q033	B-24
Q034	B-24
Q035	D-27
Q036	D-27
Q037	B-27
Q038	D-24
Q039	C-21
Q040	D-21
Q041	C-22
Q042	D-22
Q043	D-25
Q044	D-24
Q045	B-23
Q046	D-21
Q047	D-23
Q048	G-19
Q049	C-30
Q050	H-19
Q051	D-24
Q052	C-22
Q053	C-27
Q054	E-29
Q055	D-23
RV001	C-12
RV002	B-13
RV003	C-10
RV004	E-12
RV005	G-5
RV006	E-10
RV007	D-10
RV008	D-6
RV009	G-5
RV010	F-5
RV011	H-13
TP003	G-6
TP004	B-6
TP005	B-6
TP006	D-10
TP007	C-7
TP008	D-14
TP009	A-9
TP010	D-10
TP011	A-9
TP012	F-13
TP013	G-13
TP020	C-4
TP021	E-5
TP022	E-15


VI-60 BOARD (COMPONENT SIDE)
CNJ1
S VIDEO
CNJ3
PLAYER INPUT
CNJ2
S VIDEO
CNJ4
RECORDER OUTPUT
V -1
L -2
R -3
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
11
12
13
14
IC201
IC202
IC203
IC204
IC206
IC207
IC208
IC209
IC210
IC211
IC212
IC215
IC217
IC501
IC508
TP004
TP005
TP007
TP009
TP010
TP011
TP012
TP013
RV003
RV008
RV010
CV001
CV002
CV003
W006
W007


IC507
IC506
IC505
IC508
IC502
TP008
TP012
TP013
C002
C007
C046
1-629-203-
11
13
14
15
16

VI-60 BOARD (CONDUCTOR SIDE)


Q008 Q007
Q045
Q033
Q006
Q034
D005
D004
Q037
JW001
JW010
D009
Q053
Q039
D001
Q040
Q047
Q013
Q051 Q044 D012 D011
Q055
Q046
D002
Q038
Q035
Q036
D010
D003
Q002 Q003 Q004
IC216
JW005
JW004
Q029
Q026
Q031
D019 D018
Q054
Q032
17
18
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24
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26
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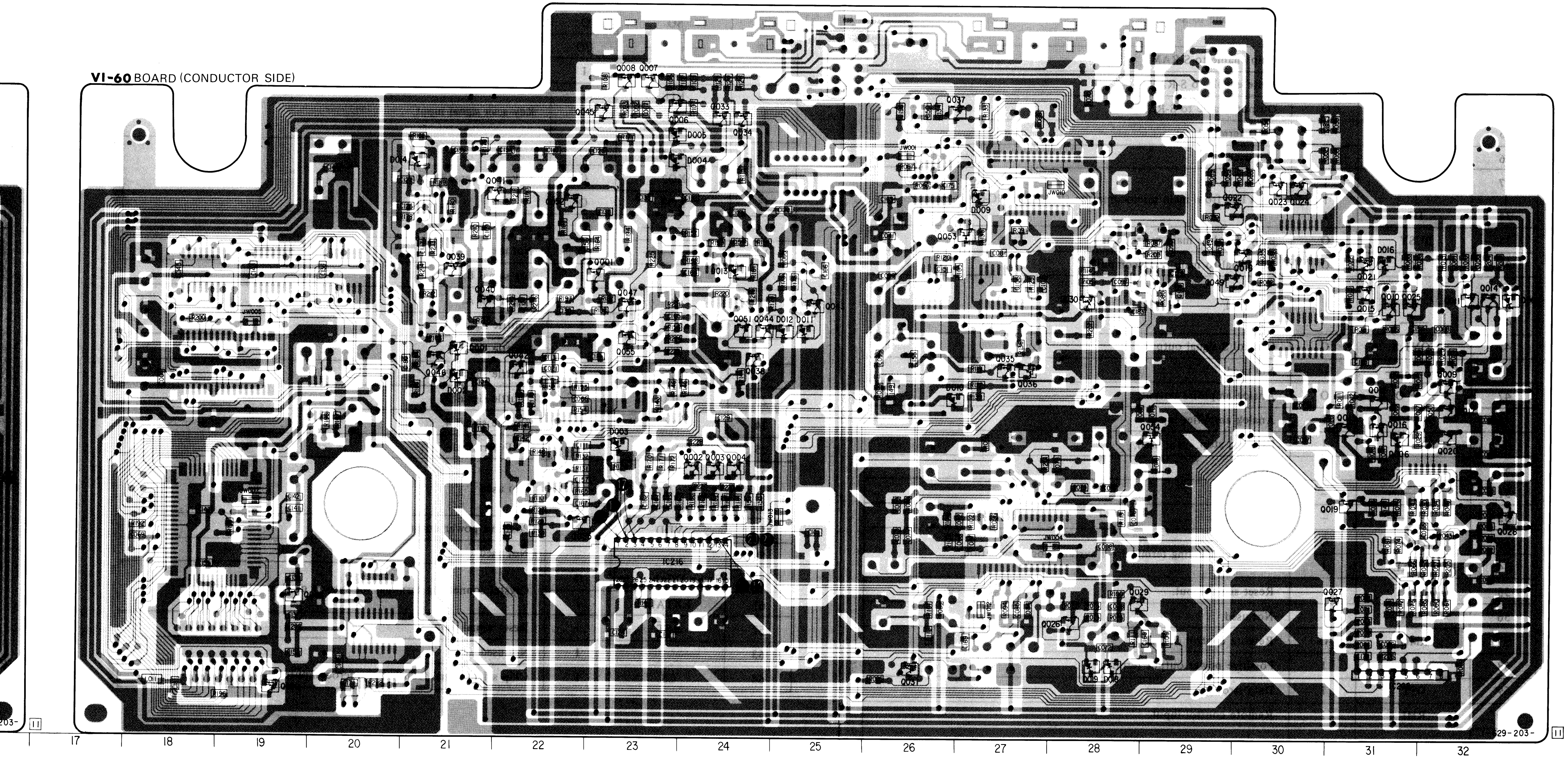
28
29

VI-60 BOARD (CONDUCTOR SIDE)


Q008 Q007
Q045
Q006
Q033
Q034
D005
D004
D004
Q041
Q039
Q040
Q001
Q047
Q055
Q048
Q042
Q013
Q051 Q044 D012 D011
Q038
D003
Q002 Q003 Q004
IC216
JW005
JW001
JW010
JW004
JW012
JW013
Q037
D009
Q053
Q035
Q036
D010
Q034
Q022
Q023 Q024
Q018
Q049
D016
Q021
Q015
Q010 Q025
Q014
Q009
Q016
Q020
Q019
Q028
Q027
Q029
Q026
Q031
D019 D018
R200
L011
203-
11
-29-203-
17
18
19
20
21
22
23
24
25
26
27
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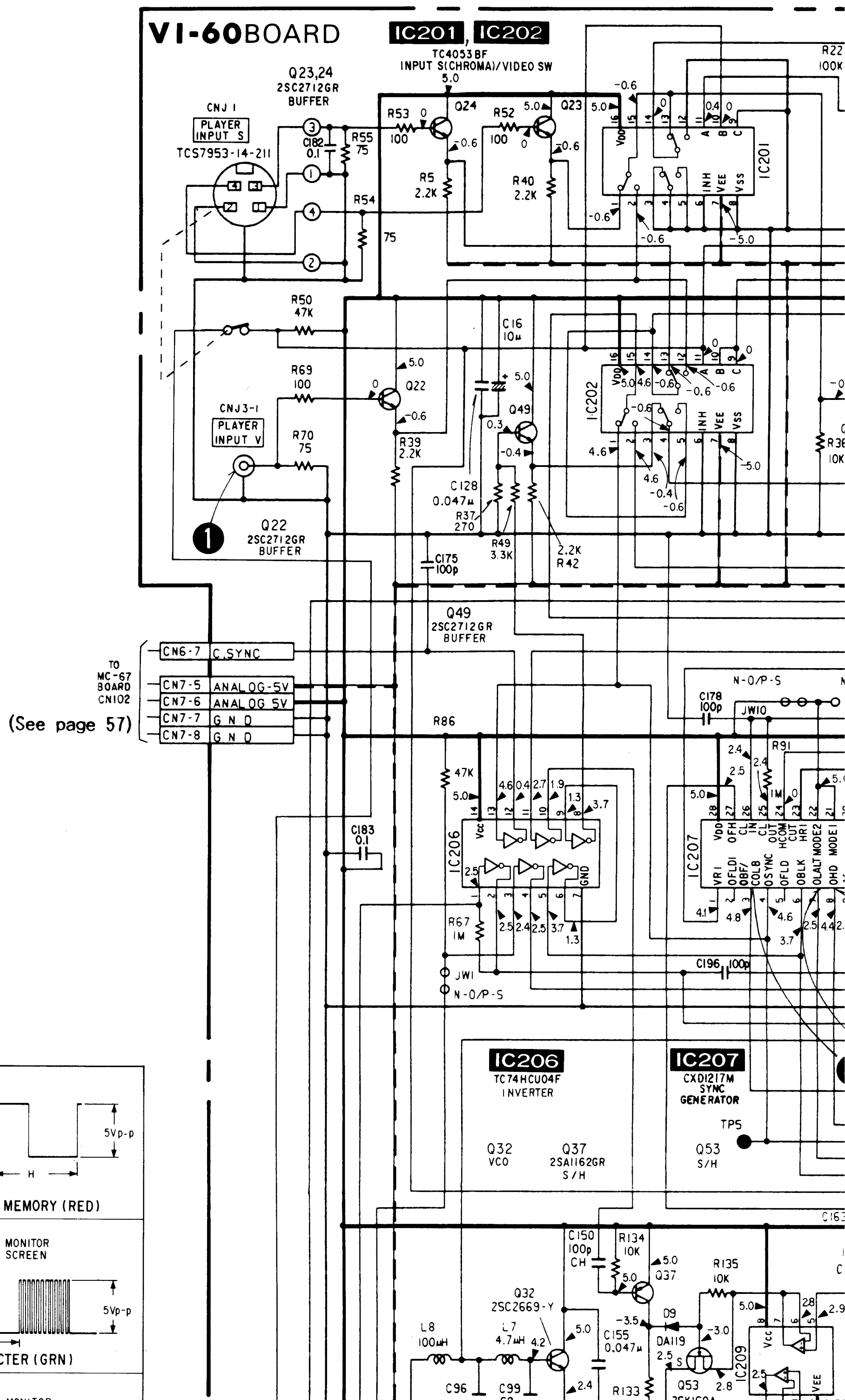
31
32

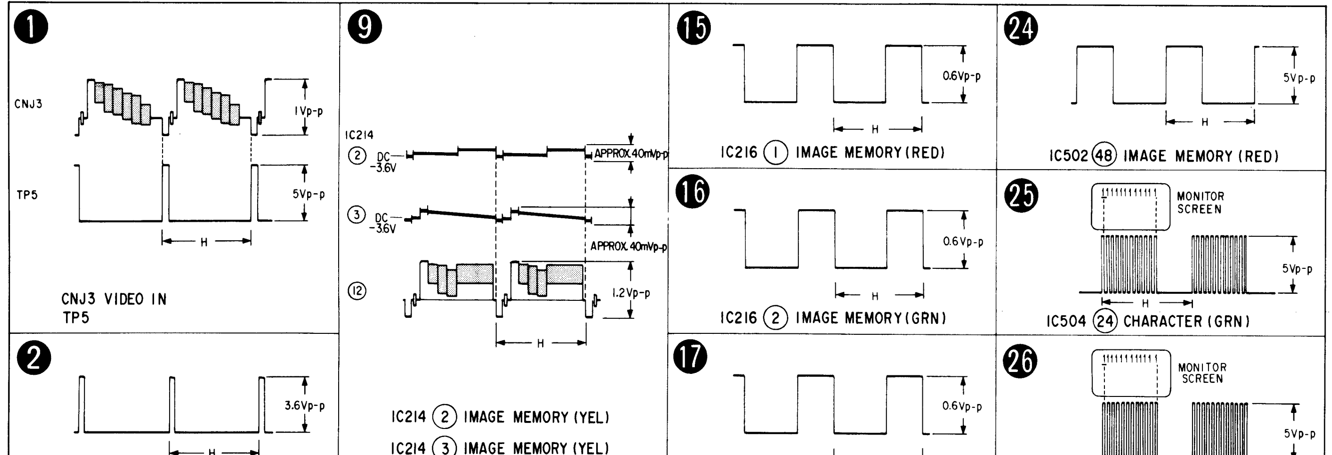
DIGITAL TITLER **DIGITAL TITLER**

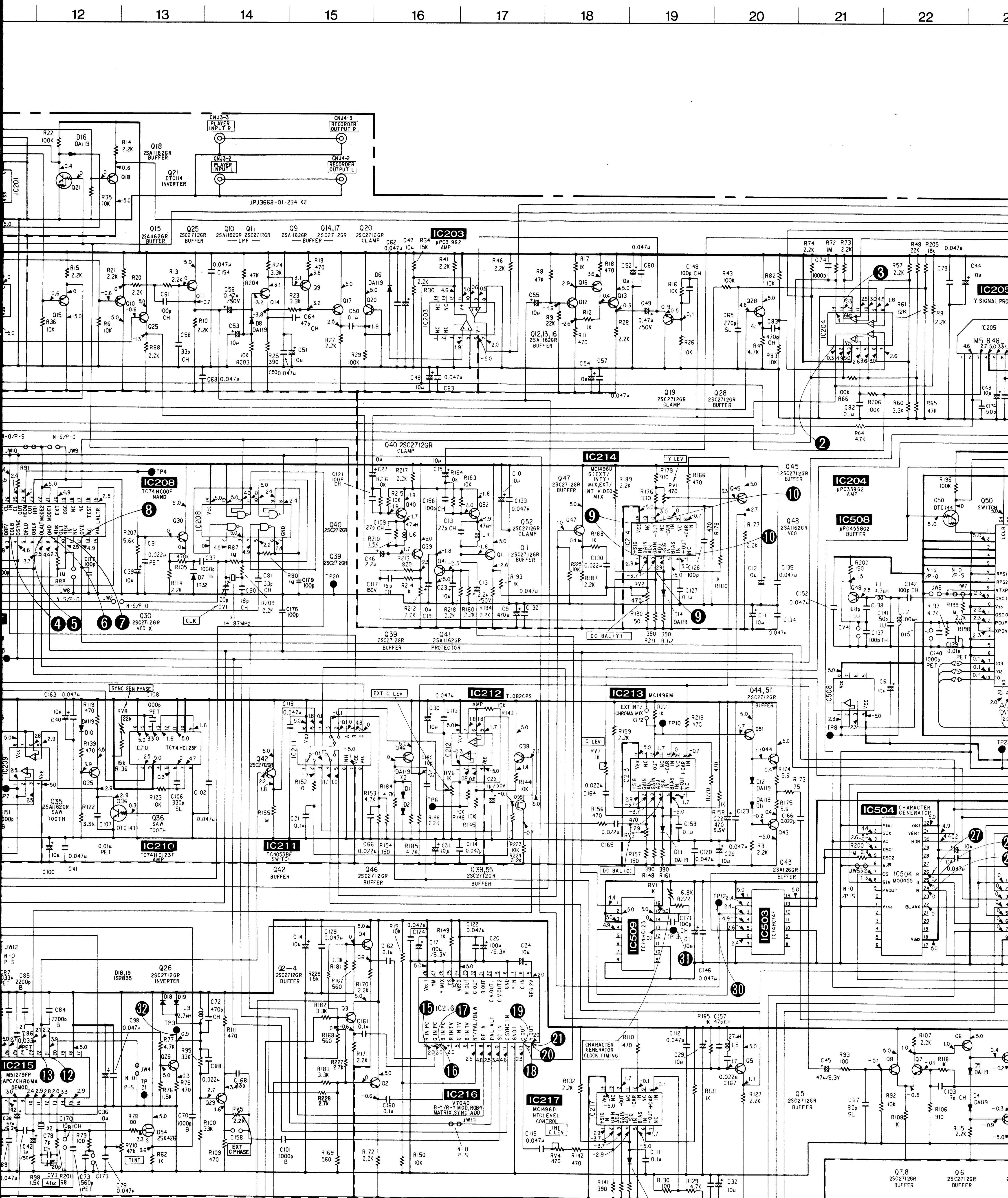
VI-60 (DIGITAL TITLER) SCHEMATIC DIAGRAM

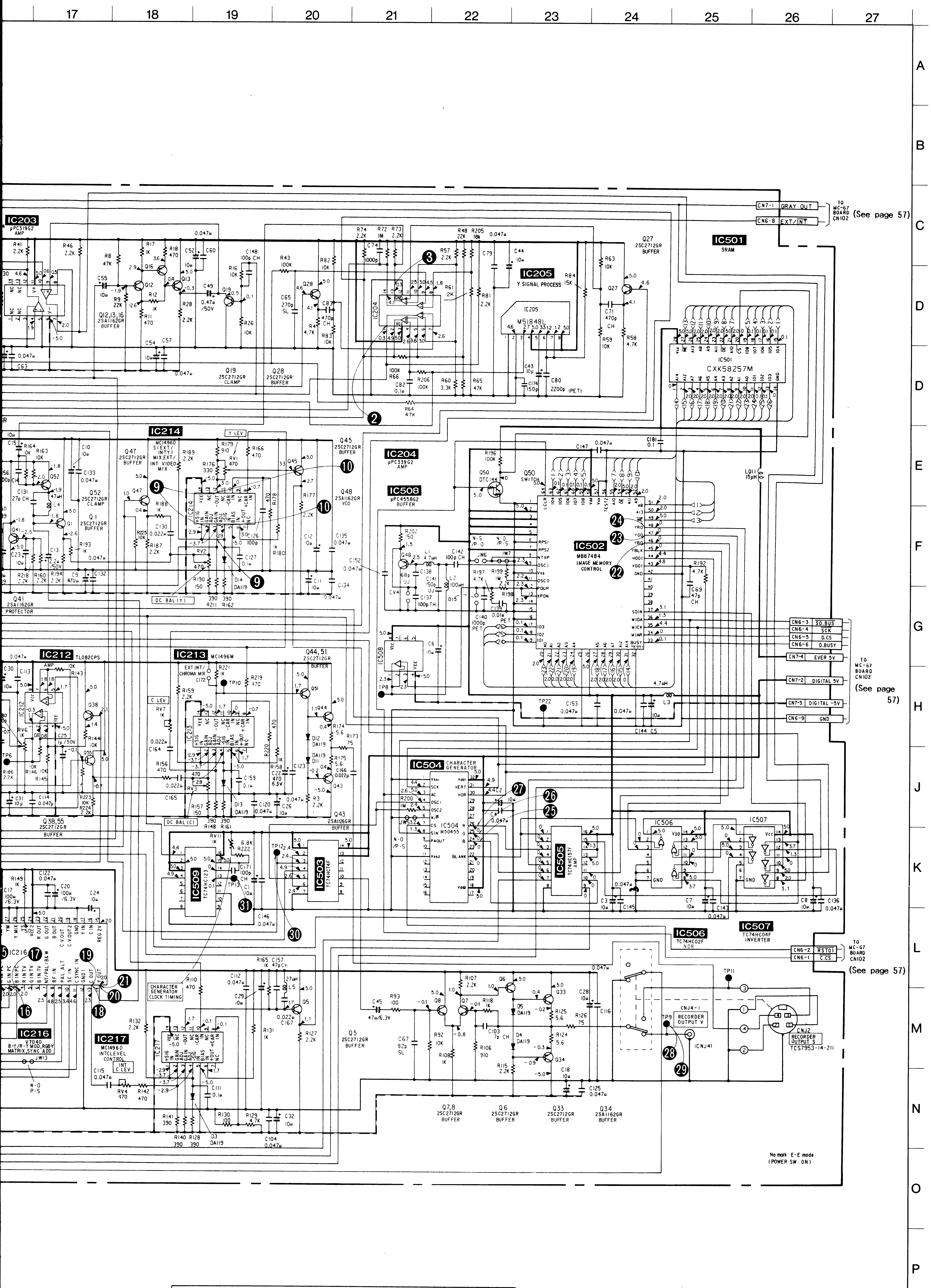
– Ref. No. VI-60 Board: 1,000 series –


VI-60BOARD
IC201, IC202
TC4053BF
INPUT S(CHROMA)/VIDEO SW
Q23,24
2SC2712GR
BUFFER
CNJ 1
PLAYER INPUT S
TCS7953-14-211
CNJ3-1
PLAYER INPUT V
Q22
2SC2712GR
BUFFER
Q49
2SC2712GR
BUFFER
TO MC-67 BOARD CN102
(See page 57)
CN6-7 C.SYNC
CN7-5 ANALOG-5V
CN7-6 ANALOG 5V
CN7-7 GND
CN7-8 GND
IC206
TC74HCU04F
INVERTER
IC207
CXD1217M
SYNC GENERATOR
Q32 VCO
Q37 2SA1162GR S/H
Q53 S/H
TP5
JW1 N-O/P-S
JW10 N-O/P-S
PLL
IC209
μPC4558G2
BUFFER
Q31 SWITCH
JW11 N-S P-O
JW12 N-O P-S
IC215
M51279FP
APC/CHROMA DEMOD
X2 :17.73447MHz
TP7

VI-60 BOARD

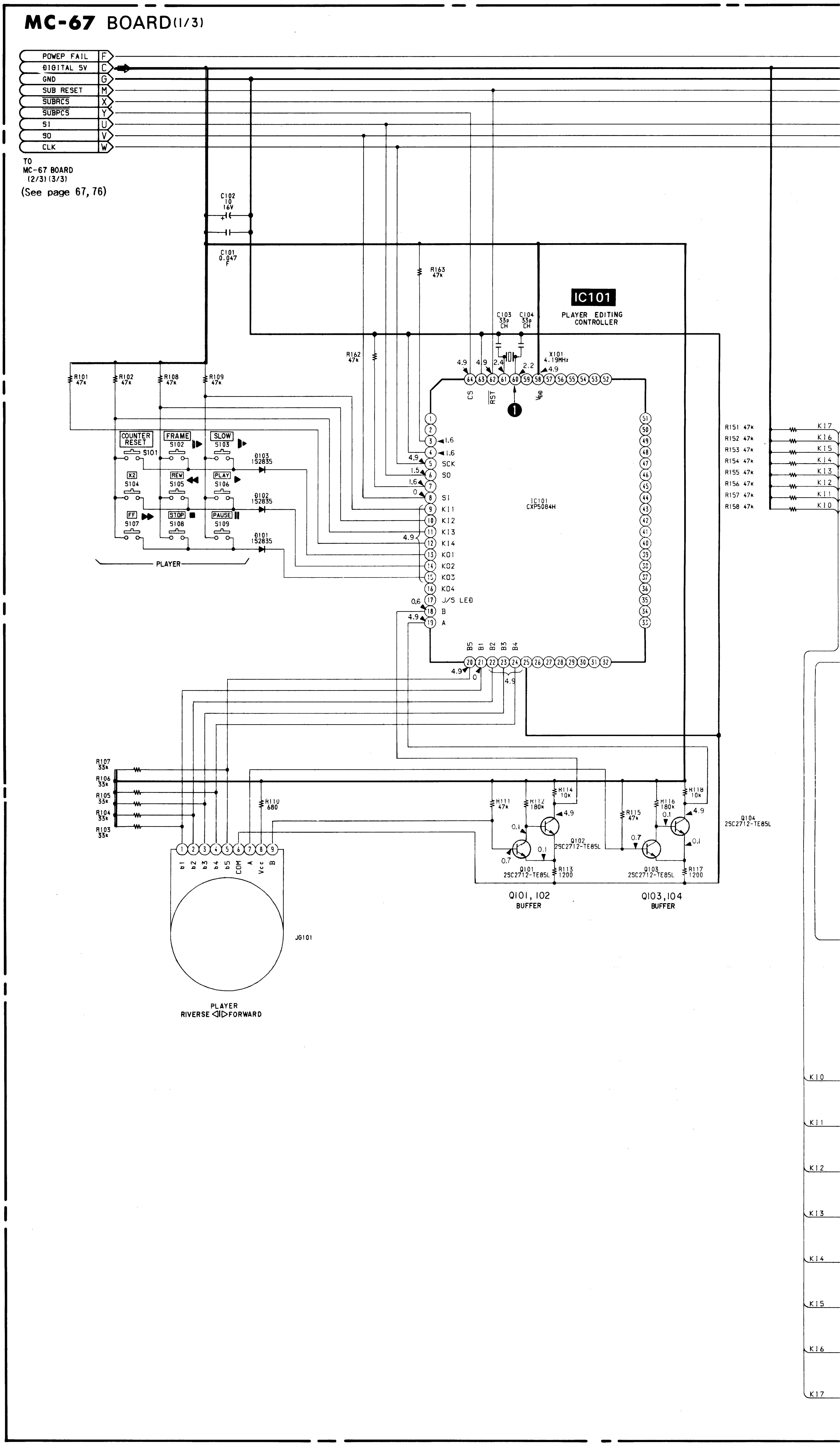

❶ CNJ3 1Vp-p TP5 5Vp-p H
CNJ3 VIDEO IN TP5
❷ 3.6Vp-p H IC204 ①
❸ 4.4Vp-p H IC204 ⑬
❹ 5Vp-p H IC207 ③
❺ 5Vp-p 2H IC207 ⑦
❻ 5Vp-p H IC207 ⑧
❼ 4Vp-p 17.73MHz IC207 ⑨
❽ 5Vp-p V IC207 ⑫
❾ IC214 ② DC -3.6V APPROX.40mVp-p ③ DC -3.6V APPROX.40mVp-p ⑫ 1.2Vp-p H
IC214 ② IMAGE MEMORY (YEL)
IC214 ③ IMAGE MEMORY (YEL)
IC214 ⑫ IMAGE MEMORY (YEL)
❿ IC214 ③ DC -3.6V APPROX.40mVp-p ⑫ 1.2Vp-p H
IC214 ③
IC214 ⑫
⓫ 0.24Vp-p H IC215 ⑤
⓬ 0.72Vp-p 4.43MHz IC215 ㉑ (TP3)
⓭ 0.84Vp-p 2H IC215 ㉒
⓮ 1Vp-p H IC215 ㉙
⓯ 0.6Vp-p H IC216 ① IMAGE MEMORY (RED)
⓰ 0.6Vp-p H IC216 ② IMAGE MEMORY (GRN)
⓱ 0.6Vp-p H IC216 ③ IMAGE MEMORY (BLU)
⓲ 0.54Vp-p H IC216 ⑬
⓳ 0.6Vp-p 2H IC216 ⑬ IMAGE MEMORY (GRN)
⓴ 0.4Vp-p H IC216 ⑭
㉑ 0.75Vp-p H IC216 ⑭ IMAGE MEMORY (GRN)
㉒ 5Vp-p H IC502 ㊻ IMAGE MEMORY (GRN)
㉓ 5Vp-p H IC502 ㊼ IMAGE MEMORY (BLU)
㉔ 5Vp-p H IC502 ㊽ IMAGE MEMORY (RED)
㉕ MONITOR SCREEN 5Vp-p H IC504 ㉔ CHARACTER (GRN)
㉖ MONITOR SCREEN 5Vp-p H IC504 ㉕ CHARACTER (BLU)
㉗ MONITOR SCREEN 5Vp-p H IC504 ㉖ CHARACTER (RED)
㉘ 1Vp-p H TP9
㉙ 1Vp-p H TP9 IMAGE MEMORY (YEL)
㉚ 5Vp-p 14.1875MHz TP12
㉛ 5Vp-p H TP13
㉜ 0.6Vp-p 4.43MHz Q26 - Ⓒ

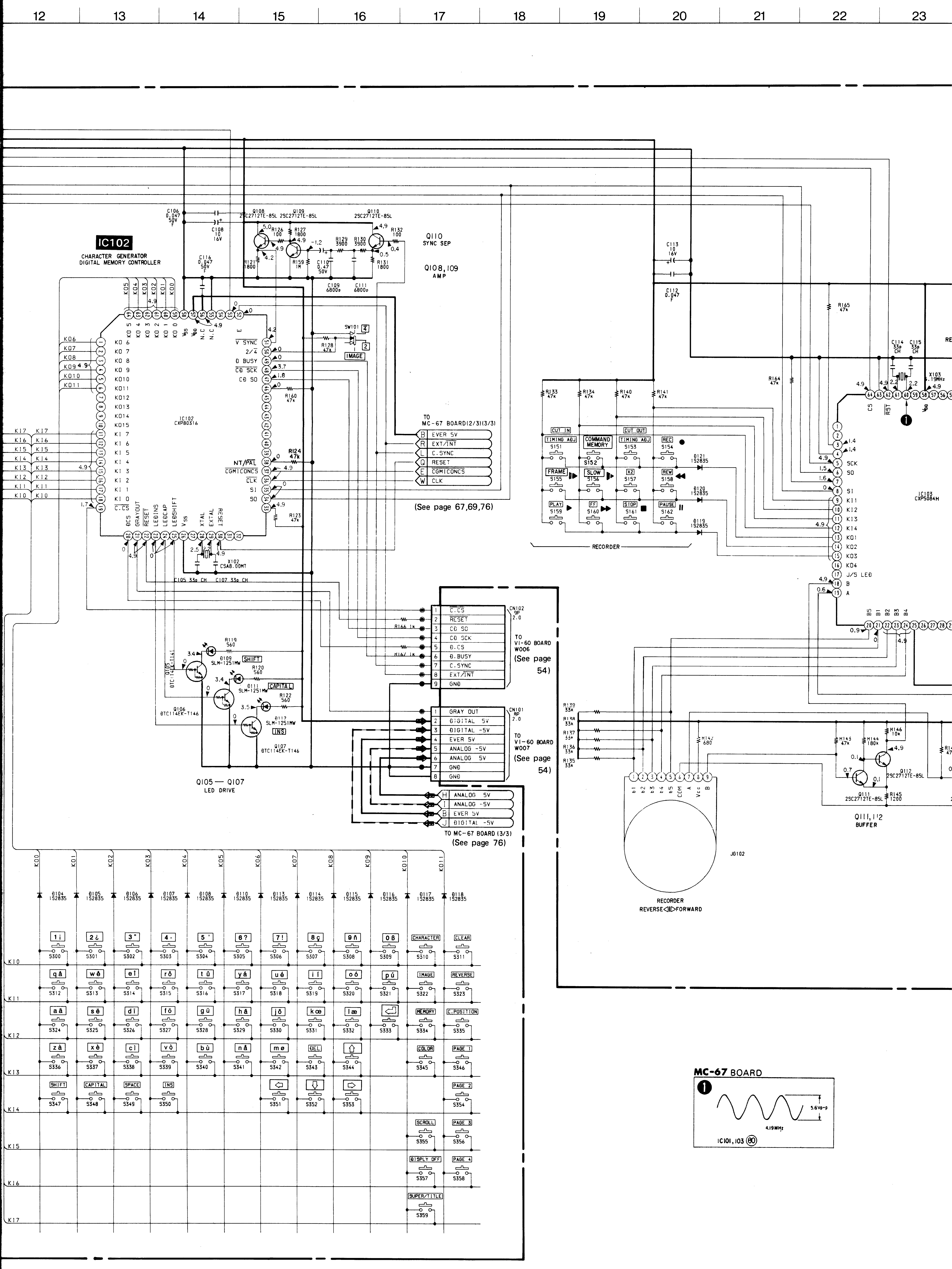
12
13
14
15
16
17
18
19
20
21
22
CNJ3-3 PLAYER INPUT R
CNJ4-3 RECORDER OUTPUT R
CNJ3-2 PLAYER INPUT L
CNJ4-2 RECORDER OUTPUT L
JPJ3668-01-234 X2
Q18 2SA1162GR BUFFER
Q21 DTC114 INVERTER
IC201
Q15 2SA1162GR BUFFER
Q25 2SC2712GR BUFFER
Q10 Q11 2SA1162GR 2SC2712GR LPF
Q9 Q14,17 2SA1162GR 2SC2712GR BUFFER
Q20 2SC2712GR CLAMP
IC203 μPC319G2 AMP
Q12,13,16 2SA1162GR BUFFER
Q19 2SC2712GR CLAMP
Q28 2SC2712GR BUFFER
IC204
IC205 Y SIGNAL PRO
M51848L
TP4
IC208 TC74HC00F NAND
Q30 2SC2712GR VCO X
X1 14.187MHz
CLK
Q40 2SC2712GR CLAMP
Q39 2SC2712GR
Q52 2SC2712GR CLAMP
Q1 2SC2712GR BUFFER
Q39 2SC2712GR BUFFER
Q41 2SA1162GR PROTECTOR
IC214 MC1496D S(EXT/INT) MIX,EXT/INT VIDEO MIX
Q47 2SC2712GR BUFFER
Y LEV
DC BAL(Y)
Q45 2SC2712GR BUFFER
Q48 2SA1162GR VCO
IC204 μPC339G2 AMP
IC508 μPC4558G2 BUFFER
Q50 DTC144 SWITCH
SYNC GEN PHASE
IC210 TC74HC123F AMP
Q35 2SA1162GR SAW TOOTH
Q36 SAW TOOTH
IC209
EXT C LEV
IC211 TC4053BF SWITCH
Q42 BUFFER
IC212 TL082CPS AMP
Q46 2SC2712GR BUFFER
Q38,55 2SC2712GR BUFFER
IC213 MC1496M
EXT INT/CHROMA MIX
C LEV
DC BAL(C)
Q44,51 2SC2712GR BUFFER
Q43 2SA1126GR BUFFER
IC504 CHARACTER GENERATOR
IC504 M50455
IC509 TC74HC123
IC503 TC74HC74F
TP12
TP13
JW12 N-O P-S
IC215 M51279FP APC/CHROMA DEMOD
D18,19 1S2835
Q26 2SC2712GR INVERTER
TP3
Q2-4 2SC2712GR BUFFER
IC216 V7040 B-Y/R-Y MOD,RGB-Y MATRIX,SYNC ADD
JW13
CHARACTER GENERATOR CLOCK TIMING
IC217 MC1496D INTCLEVEL CONTROL
INT C LEV
TINT
EXT C PHASE
Q54 2SK426
Q54 BUFFER
Q29 2SA1162GR Ø SHIFT
X2 :17.73447MHz
Q5 2SC2712GR BUFFER
Q7,8 2SC2712GR BUFFER
Q6 2SC2712GR BUFFER
N-O P-S


IC203 μPC319G2 AMP
IC205 Y SIGNAL PROCESS
IC205 M51848L
IC204
Q19 2SC2712GR CLAMP
Q28 2SC2712GR BUFFER
Q12,13,16 2SA1162GR BUFFER
Q27 2SC2712GR BUFFER
IC501 SRAM
IC501 CXK58257M
IC214 MC1496D S(EXT/INT)/ MIX,EXT/INT VIDEO MIX
Q47 2SC2712GR BUFFER
Q45 2SC2712GR BUFFER
Q48 2SA1162GR VCO
Q52 2SC2712GR CLAMP
Q1 2SC2712GR BUFFER
Q41 2SA1162GR PROTECTOR
Y LEV
DC BAL(Y)
IC204 μPC339G2 AMP
IC508 μPC4558G2 BUFFER
Q50 DTC144 SWITCH
IC502 MB87484 IMAGE MEMORY CONTROL
L011 15μH
CN7-1 GRAY OUT
CN6-8 EXT/INT
TO MC-67 BOARD CN102 (See page 57)
CN6-3 SO.BUS
CN6-4 SCK
CN6-5 D.CS
CN6-6 D.BUSY
CN7-4 EVER 5V
CN7-2 DIGITAL 5V
CN7-3 DIGITAL -5V
CN6-9 GND
TO MC-67 BOARD CN102 (See page 57)
IC212 TL082CPS
Q38,55 2SC2712GR BUFFER
IC213 MC1496M
EXT INT/ CHROMA MIX
C LEV
DC BAL(C)
Q44,51 2SC2712GR BUFFER
Q43 2SA1126GR BUFFER
IC504 CHARACTER GENERATOR
IC504 M50455
IC509 TC74HC123
IC503 TC74HC74F
IC505 TC74HC157F AMP
IC506
IC507
IC506 TC74HC02F NOR
IC507 TC74HC04F INVERTER
CN6-2 RST01
CN6-1 C.CS
TO MC-67 BOARD CN102 (See page 57)
IC216 V7040 B-Y/R-Y MOD,RGBY MATRIX,SYNC ADD
IC217 MC1496D INTCLEVEL CONTROL
INT C LEV
CHARACTER GENERATOR CLOCK TIMING
N-O P-S
CNJ4-1 RECORDER OUTPUT V
CNJ41
CNJ2 RECORDER OUTPUT S TCS7953-14-211
TP11
TP9
Q5 2SC2712GR BUFFER
Q7,8 2SC2712GR BUFFER
Q6 2SC2712GR BUFFER
Q33 2SC2712GR BUFFER
Q34 2SA1162GR BUFFER
No mark: E-E mode (POWER SW: ON)

MC-67 (1/3) (EDITING CONTROL) SCHEMATIC DIAGRAM

–Ref. No. MC-67 Board: 2,000 series–


MC-67 BOARD(1/3)
POWEP FAIL F
DIGITAL 5V C
GND G
SUB RESET M
SUBRCS X
SUBPCS Y
SI U
SO V
CLK W
TO MC-67 BOARD (2/3) (3/3)
(See page 67, 76)
C102 10 16V
C101 0.047 F
R163 47k
R162 47k
IC101
PLAYER EDITING CONTROLLER
C103 33p CH
C104 33p CH
X101 4.19MHz
CS
RST
VDD
R101 47k
R102 47k
R108 47k
R109 47k
COUNTER RESET S101
FRAME S102
SLOW S103
X2 S104
REW S105
PLAY S106
FF S107
STOP S108
PAUSE S109
D103 1S2835
D102 1S2835
D101 1S2835
PLAYER
SCK
SO
SI
K11
K12
K13
K14
KO1
KO2
KO3
KO4
J/S LED
B
A
IC101 CXP5084H
B5 B1 B2 B3 B4
R151 47k
R152 47k
R153 47k
R154 47k
R155 47k
R156 47k
R157 47k
R158 47k
K17
K16
K15
K14
K13
K12
K11
K10
R107 33k
R106 33k
R105 33k
R104 33k
R103 33k
R110 680
R111 47k
R112 180k
R114 10k
R113 1200
R115 47k
R116 180k
R118 10k
R117 1200
Q101 2SC2712-TE85L
Q102 2SC2712-TE85L
Q103 2SC2712-TE85L
Q104 2SC2712-TE85L
Q101, 102 BUFFER
Q103, 104 BUFFER
b1 b2 b3 b4 b5 COM A Vcc B
JG101
PLAYER
RIVERSE ◁‖▷ FORWARD
K10
K11
K12
K13
K14
K15
K16
K17


12
13
14
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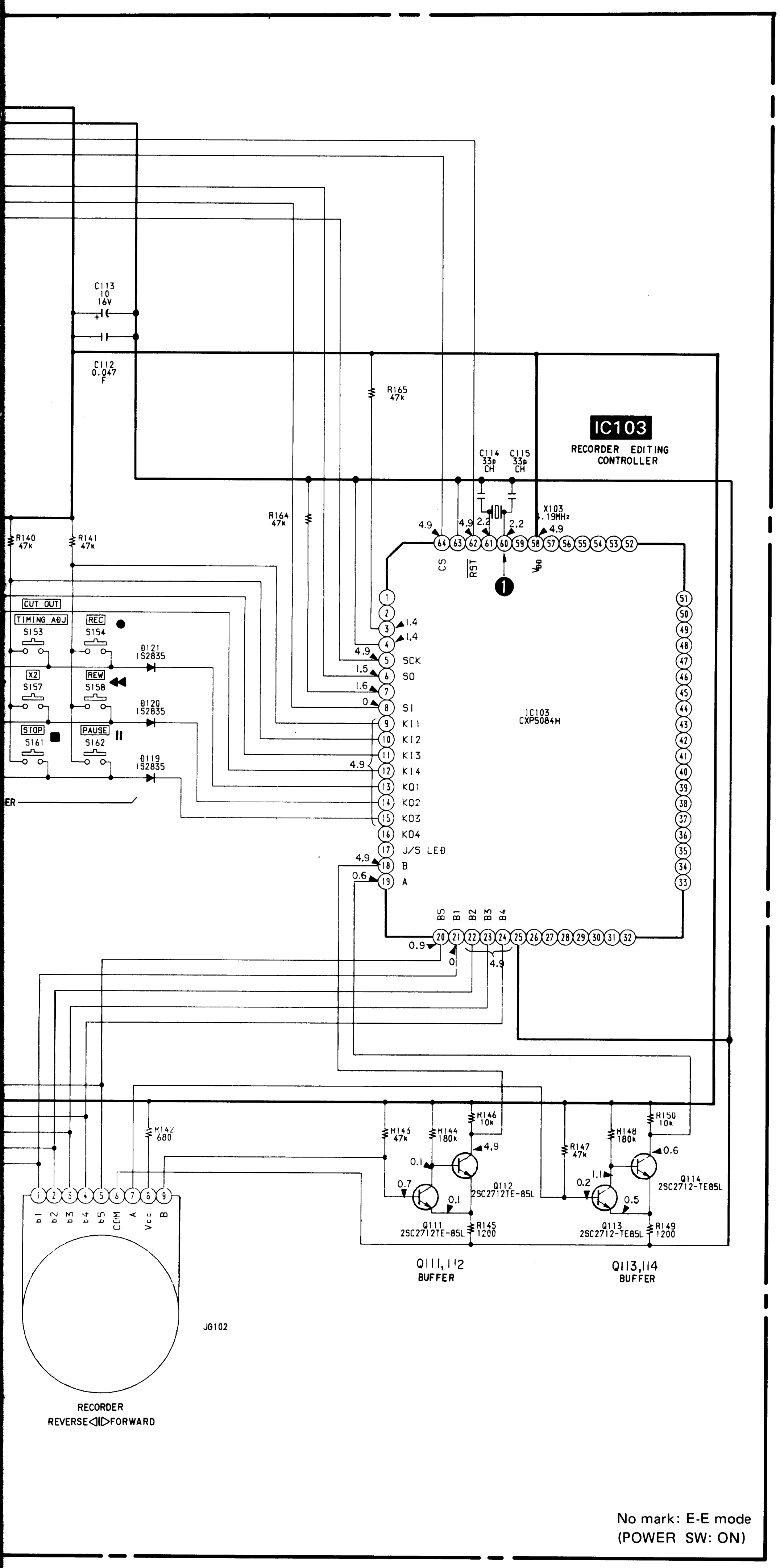
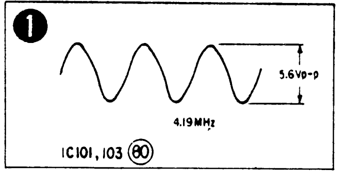
16
17
18
19
20
21
22
23
IC102
CHARACTER GENERATOR
DIGITAL MEMORY CONTROLLER
IC102
CXP80316
Q110
SYNC SEP
Q108,109
AMP
Q108 2SC2712TE-85L
Q109 2SC2712TE-85L
Q110 2SC2712TE-85L
V SYNC
2/4
Ɵ BUSY
CƟ SCK
CƟ SO
NT/PAL
CGMICONCS
CLK
SI
SO
C.CS
GRAYOUT
RESET
LEDINS
LEDCAP
LEDSHIFT
XTAL
EXTAL
X102
CSA8.00MT
SW101
IMAGE
TO
MC-67 BOARD(2/3)(3/3)
B EVER 5V
R EXT/INT
L C.SYNC
Q RESET
E CGMICONCS
W CLK
(See page 67,69,76)
CN102
9P
2.0
1 C.CS
2 RESET
3 CƟ SO
4 CƟ SCK
5 Ɵ.CS
6 Ɵ.BUSY
7 C.SYNC
8 EXT/INT
9 GNƟ
TO
VI-60 BOARD
W006
(See page
54)
CN101
8P
2.0
1 GRAY OUT
2 DIGITAL 5V
3 DIGITAL -5V
4 EVER 5V
5 ANALOG -5V
6 ANALOG 5V
7 GNƟ
8 GNƟ
TO
VI-60 BOARD
W007
(See page
54)
H ANALOG 5V
I ANALOG -5V
B EVER 5V
J DIGITAL -5V
TO MC-67 BOARD (3/3)
(See page 76)
SHIFT
CAPITAL
INS
Q105 — Q107
LED DRIVE
D109 SLM-1251MW
D111 SLM-1251MW
D112 SLM-1251MW
Q105 DTC114EK-T146
Q106 DTC114EK-T146
Q107 DTC114EK-T146
CUT IN
TIMING ADJ
S151
COMMAND
MEMORY
S152
CUT OUT
TIMING ADJ
S153
REC
S154
FRAME
S155
SLOW
S156
X2
S157
REW
S158
PLAY
S159
FF
S160
STOP
S161
PAUSE
S162
RECORDER
D121 1S2835
D120 1S2835
D119 1S2835
IC103
CXP5084H
X103
4.19MHz
SCK
SO
SI
K11
K12
K13
K14
KO1
KO2
KO3
KO4
J/S LED
B
A
Q111,112
BUFFER
Q111 2SC2712TE-85L
Q112 2SC2712TE-85L
JG102
RECORDER
REVERSE◁||▷FORWARD
K00
K01
K02
K03
K04
K05
K06
K07
K08
K09
K010
K011
D104 1S2835
D105 1S2835
D106 1S2835
D107 1S2835
D108 1S2835
D110 1S2835
D113 1S2835
D114 1S2835
D115 1S2835
D116 1S2835
D117 1S2835
D118 1S2835
CHARACTER
CLEAR
IMAGE
REVERSE
MEMORY
C.POSITION
DEL
COLOR
PAGE 1
SHIFT
CAPITAL
SPACE
INS
PAGE 2
SCROLL
PAGE 3
DISPLY OFF
PAGE 4
SUPER/TITLE
K10
K11
K12
K13
K14
K15
K16
K17
MC-67 BOARD
5.6Vp-p
4.19MHz
IC101, 103 (80)


C113
10
16V
C112
0.047
F
R165
47k
R164
47k
R140
47k
R141
47k
IC103
RECORDER EDITING
CONTROLLER
C114
33p
CH
C115
33p
CH
X103
4.19MHz
CS
RST
VDD
SCK
SO
SI
K11
K12
K13
K14
KO1
KO2
KO3
KO4
J/S LED
B
A
B5
B1
B2
B3
B4
IC103
CXP5084H
CUT OUT
TIMING ADJ
S153
REC
S154
●
D121
1S2835
X2
S157
REW
S158
◀◀
D120
1S2835
STOP
S161
■
PAUSE
S162
II
D119
1S2835
4.9
4.9
2.2
2.2
4.9
1.4
1.4
4.9
1.5
1.6
0
4.9
4.9
0.6
0.9
0
4.9
R142
680
R143
47k
R144
180k
R146
10k
4.9
0.1
0.7
0.1
Q112
2SC2712TE-85L
Q111
2SC2712TE-85L
R145
1200
R147
47k
R148
180k
R150
10k
0.6
1.1
0.2
0.5
Q114
2SC2712-TE85L
Q113
2SC2712-TE85L
R149
1200
Q111,112
BUFFER
Q113,114
BUFFER
b1
b2
b3
b4
b5
COM
A
Vcc
B
JG102
RECORDER
REVERSE◁II▷FORWARD

No mark: E-E mode
(POWER SW: ON)

MC-67 BOARD



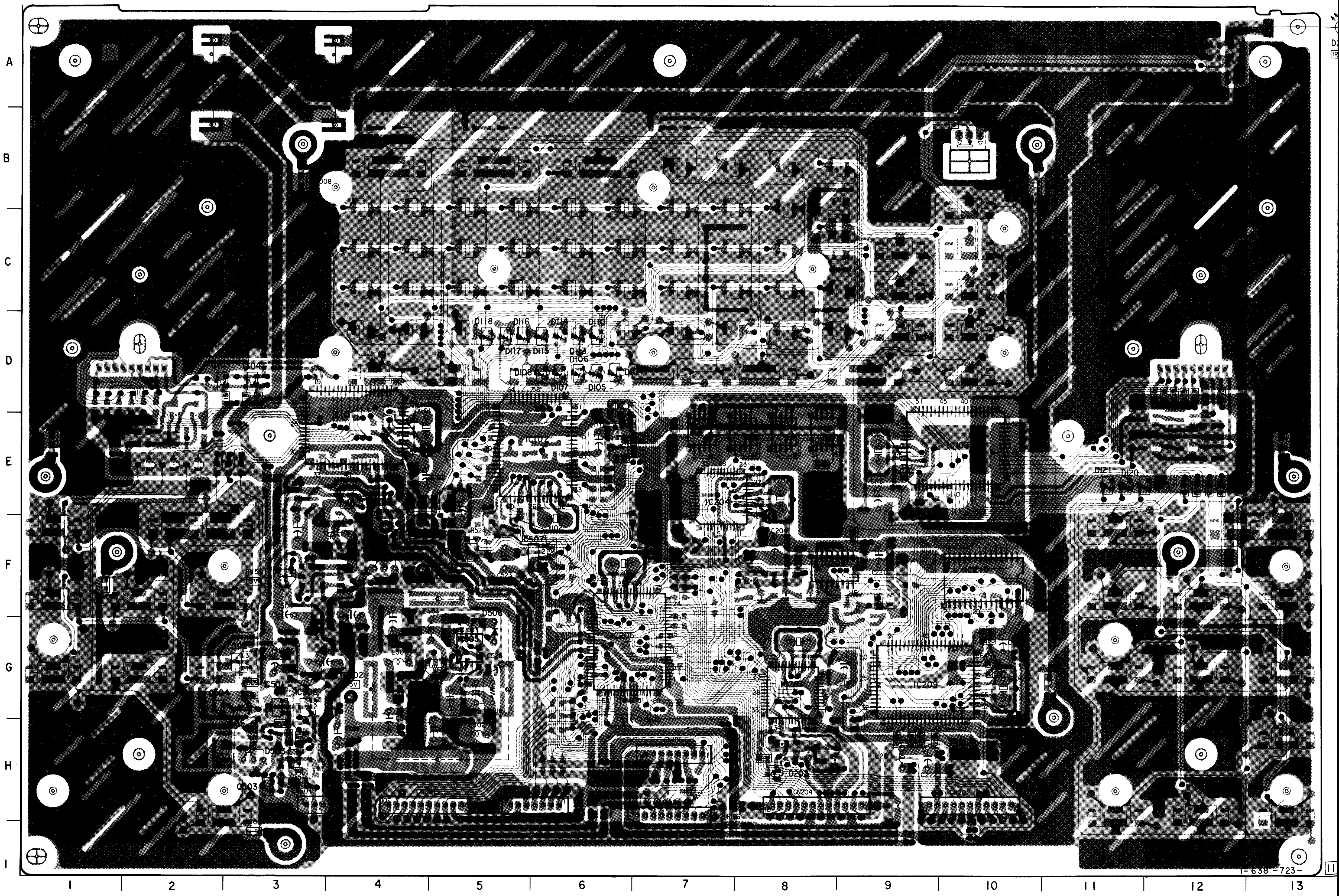
EDITING CONTROL EDITING CONTROL

–Ref. No. MC-67 Board: 2,000 series–

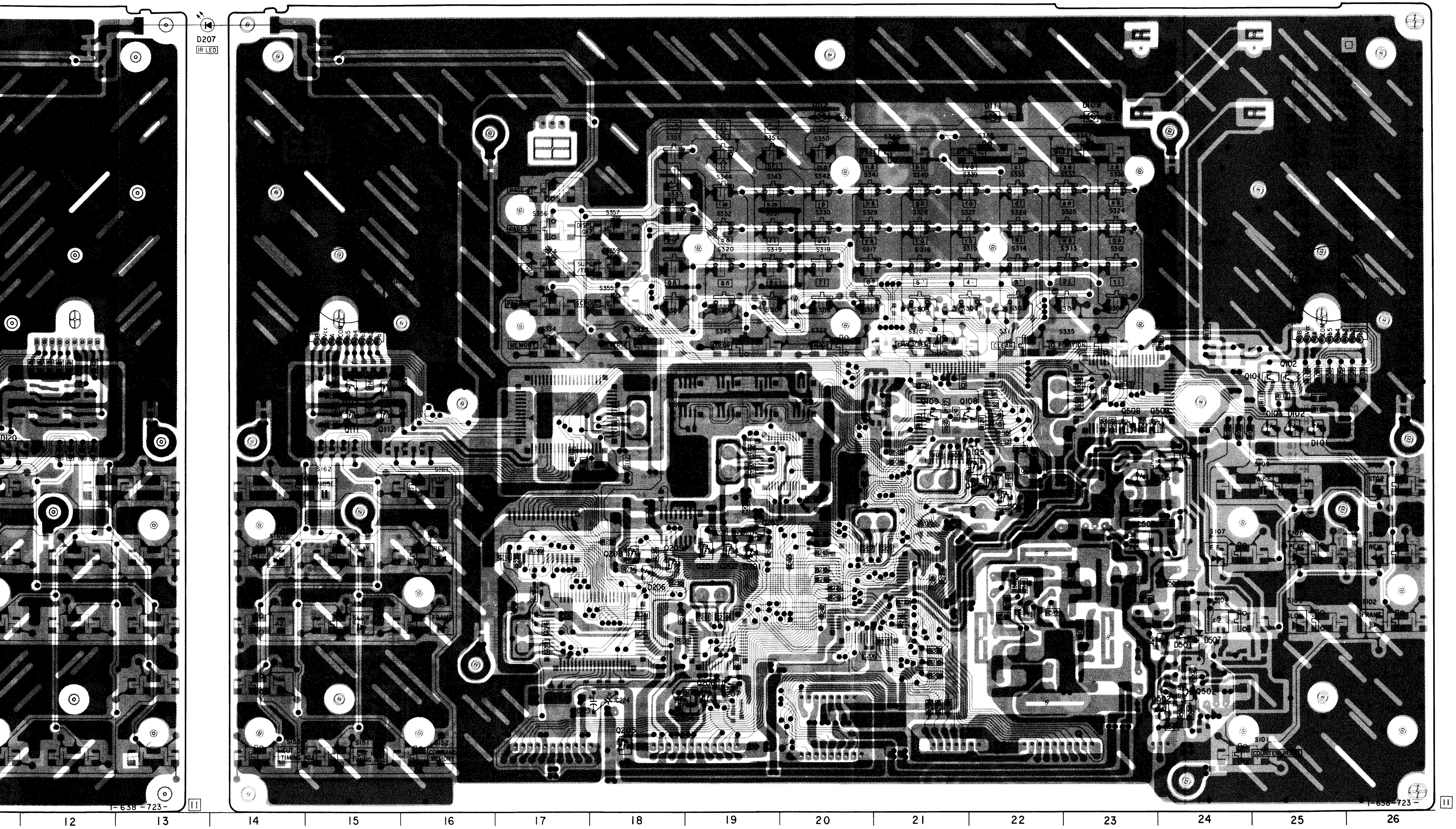
MC-67 BOARD

D101	E-25
D102	E-25
D103	E-25
D104	D-6
D105	D-6
D106	D-6
D107	D-6
D108	D-6
D109	B-23
D110	D-6
D111	B-22
D112	B-20
D113	D-6
D114	D-6
D115	D-6
D116	D-5
D117	D-5
D118	D-5
D119	E-11
D120	E-11
D121	E-11
D201	F-19
D202	H-8
D206	G-18
D207	A-13
D501	G-24
D502	F-23
D503	H-3
D504	G-24
D505	F-23
D507	G-24
D508	F-5
IC101	E-4
IC102	E-5
IC103	E-10
IC201	E-8
IC202	E-8
IC203	E-7
IC204	E-7
IC205	E-7
IC206	G-6
IC207	G-8
IC208	F-9
IC209	G-9
IC210	F-10
IC501	G-3
IC502	G-2
IC503	F-23
IC504	E-24
IC505	G-5
IC506	G-3
IC507	F-5
Q101	E-25
Q102	E-25
Q103	D-2
Q104	D-3
Q105	F-22
Q106	F-22
Q107	F-22
Q108	E-21
Q109	E-21
Q110	E-6
Q111	E-15
Q112	E-15
Q113	E-15
Q114	E-15
Q201	F-19
Q202	F-19
Q203	F-19
Q204	H-18
Q205	H-18
Q206	H-19
Q207	H-19
Q208	F-18
Q209	G-18
Q501	H-3
Q502	H-24
Q503	H-3
Q504	G-2
Q505	G-3
Q506	F-4
Q507	E-4
Q508	E-23
Q509	E-24

MC-67 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
D118
D116
D114
D110
D117
D115
D113
D106
D108
D107
D105
D121
D120
IC102
IC204
IC205
IC209
R524
IC507
CN204
CN202
D201
D503
Q503
1-638-723-

MC-67 BOARD (CONDUCTOR SIDE)


D207
IR LED
S353
S350
S348
S341
S340
S339
S338
S337
S332
S330
S329
S328
S327
S326
S325
S324
S320
S319
S318
S317
S316
S315
S314
S313
S312
S357
S356
S355
S354
S345
S335
S310
MEMORY
CLEAR
Q109
Q108
Q110
Q111
Q112
Q102
Q508
Q509
Q501
Q502
Q503
Q205
Q206
D206
D111
D109
D120
D101
D102
D501
D507
S161
S162
S151
S152
S155
PAUSE
S101
S102
S105
S106
S107
STOP
PLAY
REW
FRAME
1-638-723-
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

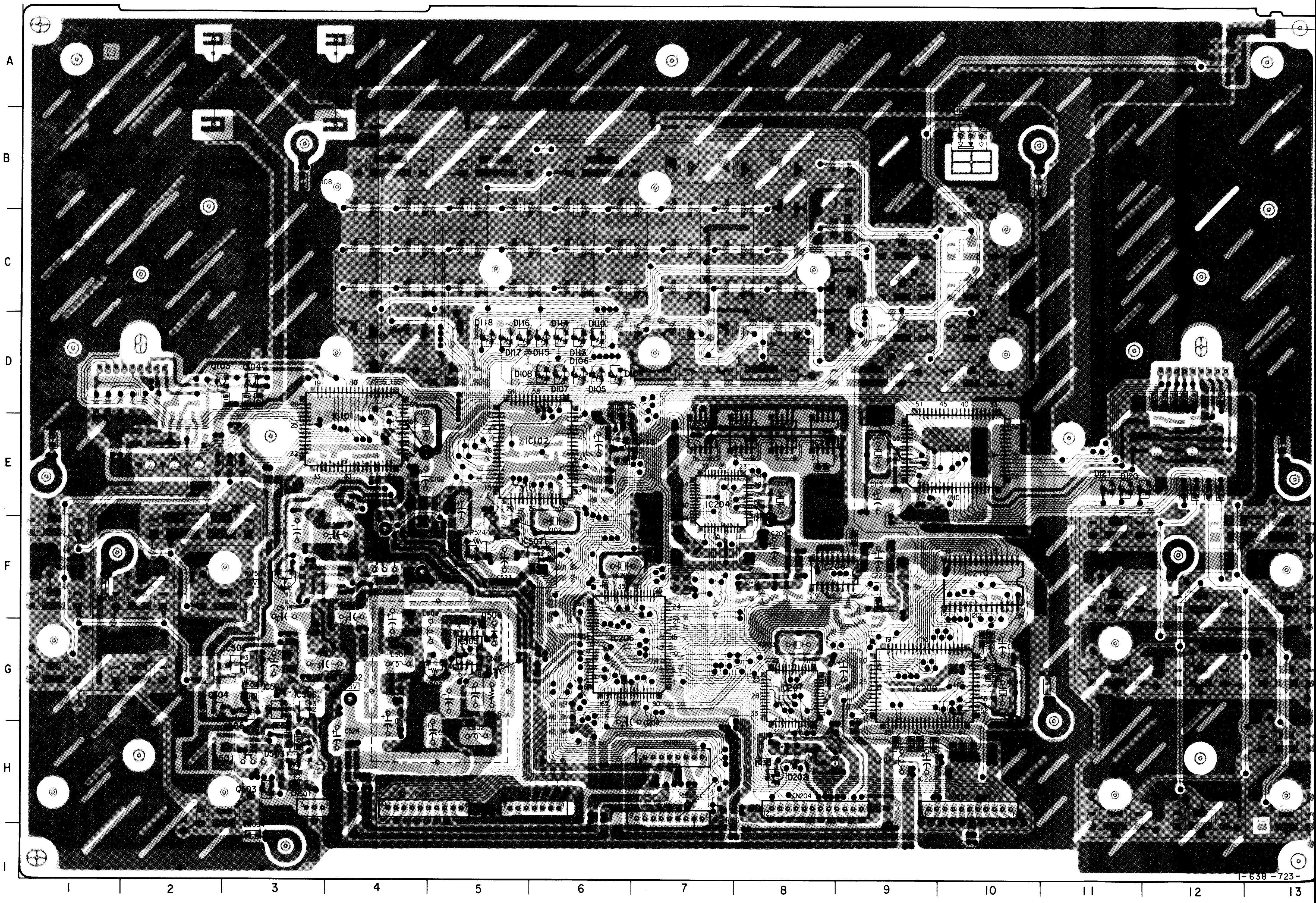
MC-67 (MAIN CONTROL) PRINTED WIRING BOARD

– Ref. No. MC-67 Board: 2,000 series –

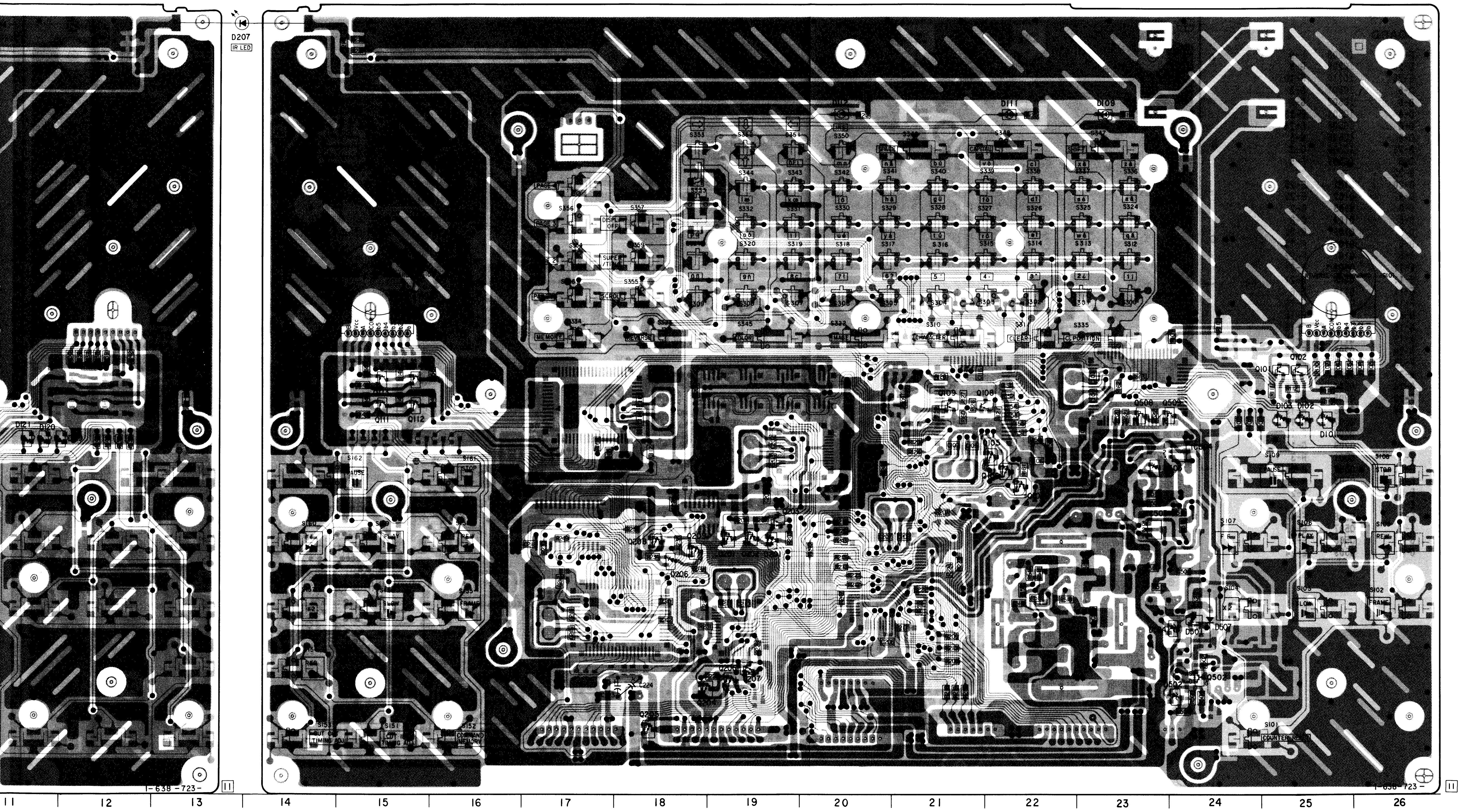
MC-67 BOARD

D101	E-25	IC208	F-9
D102	E-25	IC209	G-9
D103	E-25	IC210	F-10
D104	D-6	IC501	G-3
D105	D-6	IC502	G-2
D106	D-6	IC503	F-23
D107	D-6	IC504	E-24
D108	D-6	IC505	G-5
D109	B-23	IC506	G-3
D110	D-6	IC507	F-5
D111	B-22		
D112	B-20	Q101	E-25
D113	D-6	Q102	E-25
D114	D-6	Q103	D-2
D115	D-6	Q104	D-3
D116	D-5	Q105	F-22
D117	D-5	Q106	F-22
D118	D-5	Q107	F-22
D119	E-11	Q108	E-21
D120	E-11	Q109	E-21
D121	E-11	Q110	E-6
D201	F-19	Q111	E-15
D202	H-8	Q112	E-15
D206	G-18	Q113	E-15
D207	A-13	Q114	E-15
D501	G-24	Q201	F-19
D502	F-23	Q202	F-19
D503	H-3	Q203	F-19
D504	G-24	Q204	H-18
D505	F-23	Q205	H-18
D507	G-24	Q206	H-19
D508	F-5	Q207	H-19
		Q208	F-18
IC101	E-4	Q209	G-18
IC102	E-5	Q501	H-3
IC103	E-10	Q502	H-24
IC201	E-8	Q503	H-3
IC202	E-8	Q504	G-2
IC203	E-7	Q505	G-3
IC204	E-7	Q506	F-4
IC205	E-7	Q507	E-4
IC206	G-6	Q508	E-23
IC207	G-8	Q509	E-24

MC-67 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
IC101
IC102
IC103
IC204
IC206
IC207
IC209
IC210
IC507
D118
D116
D114
D110
D117
D115
D113
D106
D108
D107
D105
D121
D120
Q103
Q104
1-638-723-

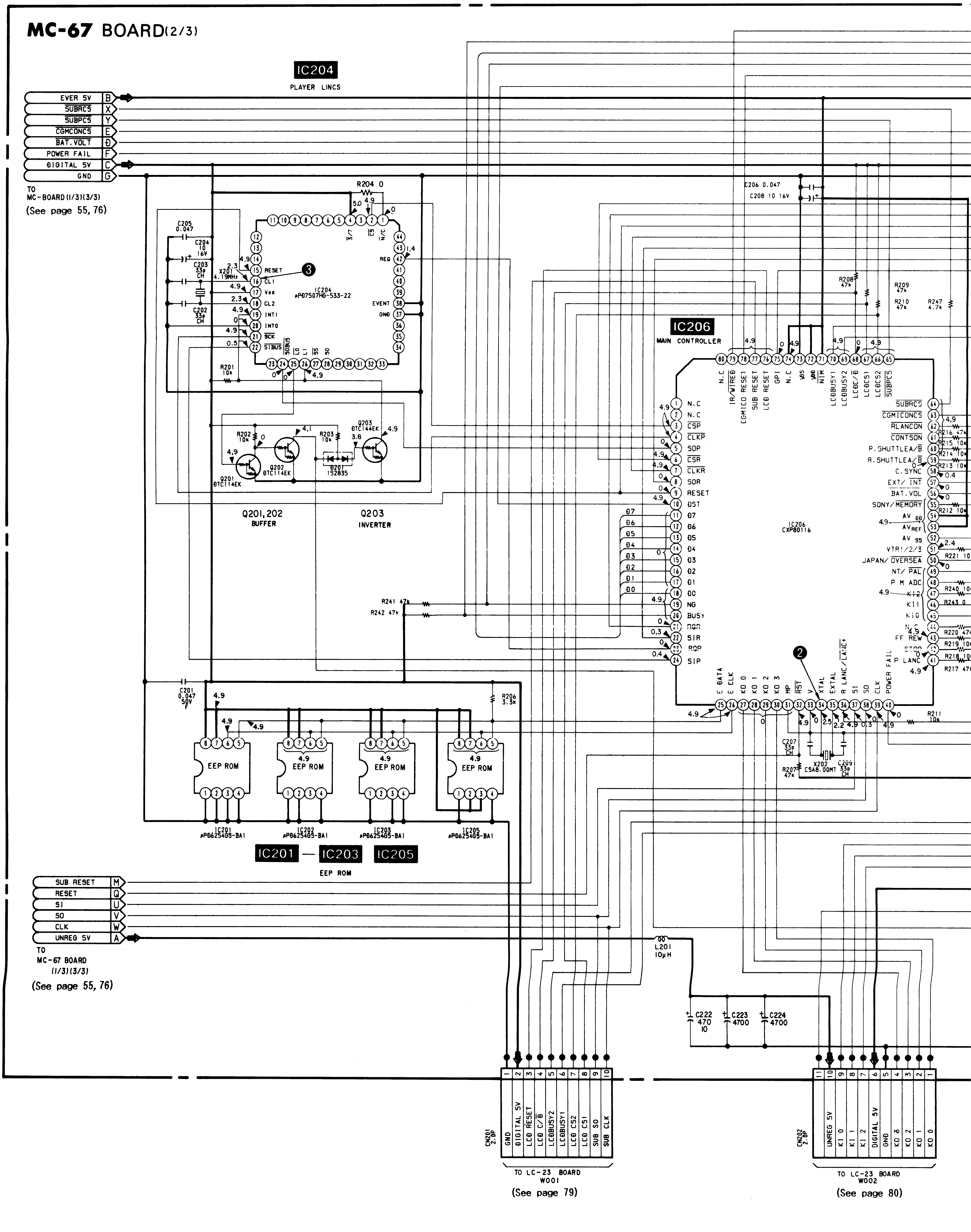
MC-67 BOARD (CONDUCTOR SIDE)

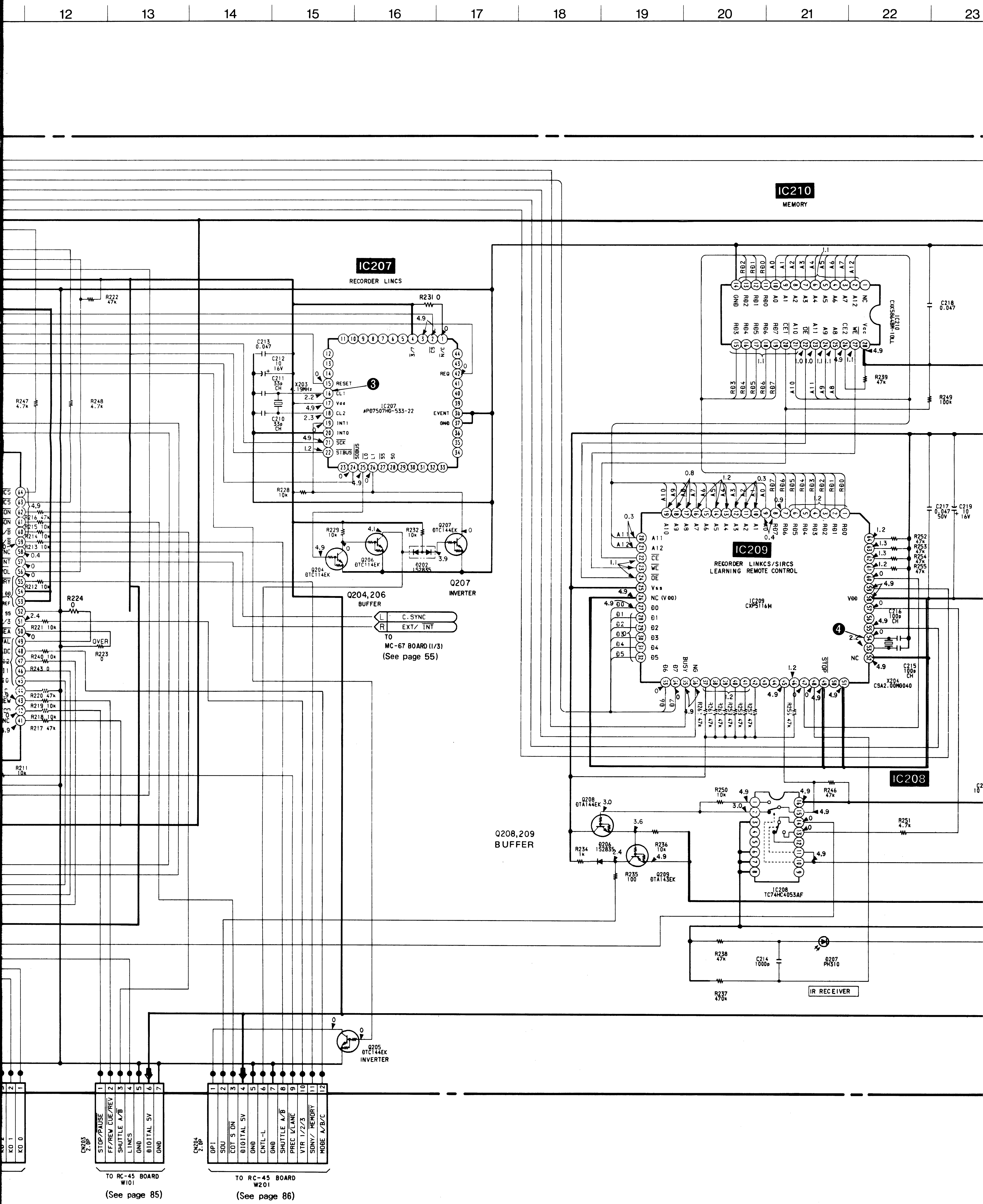

D207
IR LED
D111
D109
S353
S350
S349
S348
S347
S344
S343
S342
S341
S340
S339
S338
S337
S336
S332
S331
S330
S329
S328
S327
S326
S325
S324
S320
S319
S318
S317
S316
S315
S314
S313
S312
S356
S357
S355
S334
S345
S333
S310
S311
S335
PAGE
DISPLAY OFF
SUPER/TIME
SCROLL
MEMORY
REVERSE
COLOR
CHARACTER
CLEAR
C.POSITION
Q111
Q112
D121
D120
Q101
Q102
D103
D102
D101
Q109
Q108
Q105
Q508
Q503
Q206
D206
C224
Q205
D501
D507
Q502
S162
PAUSE
S161
STOP
S160
S151
S152
S153
S109
S108
S107
S106
S105
S104
S103
S102
S101
PLAY
REW
FRAME
COUNTER RESET
×2
1-638-723-
11
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

MAIN CONTROL MAIN CONTROL

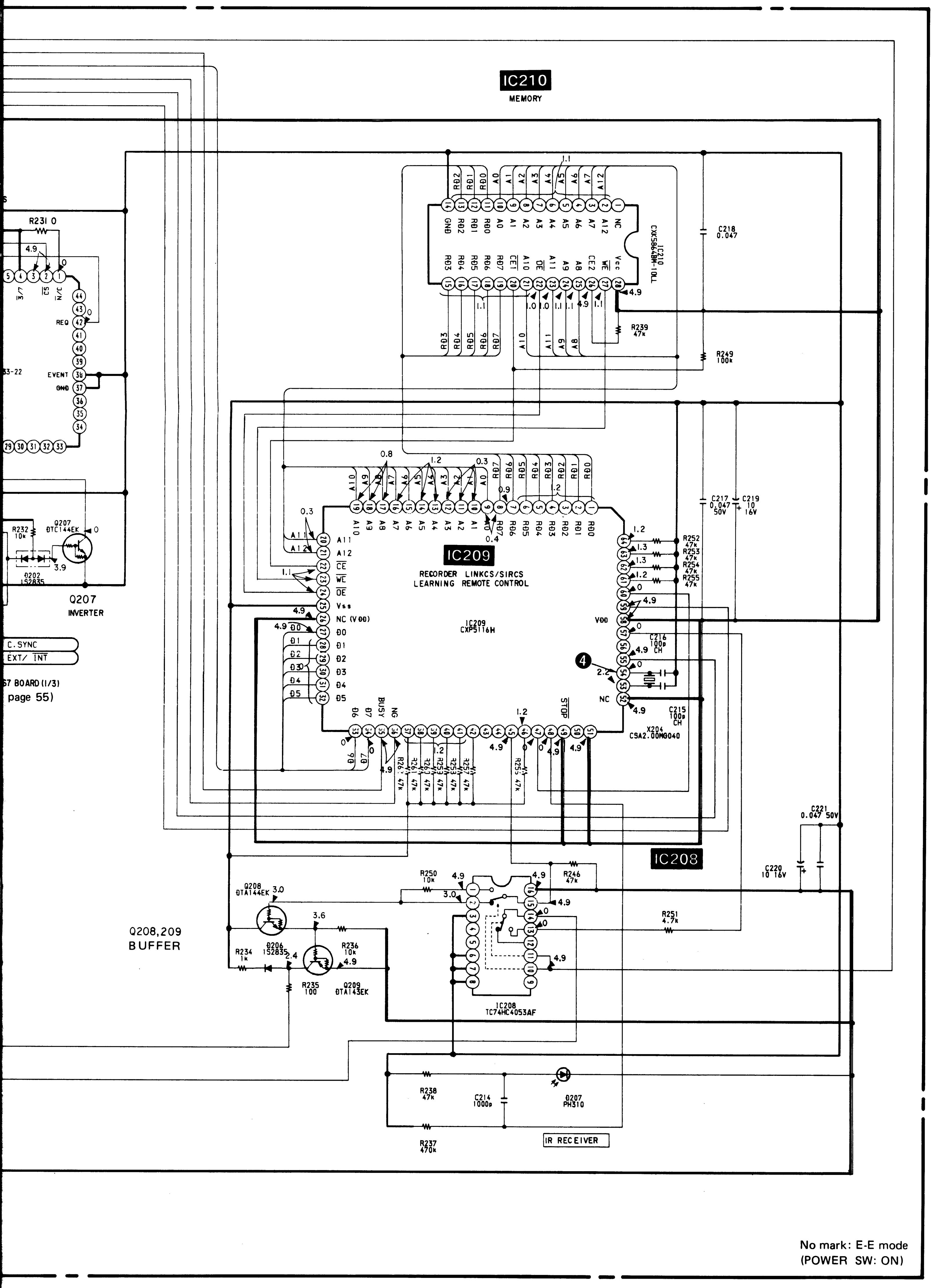
MC-67 (2/3) (MAIN CONTROL) SCHEMATIC DIAGRAM

–Ref. No. MC-67 Board: 2,000 series–


MC-67 BOARD(2/3)
IC204
PLAYER LINCS
EVER 5V
SUBRCS
SUBPCS
CGMCONCS
BAT.VOLT
POWER FAIL
DIGITAL 5V
GND
TO
MC-BOARD (1/3)(3/3)
(See page 55, 76)
R204 0
C205 0.047
C204 10 16V
C203 33p CH
X201 4.19MHz
C202 33p CH
RESET
CL1
Vdd
CL2
INT1
INT0
SCK
SIBUS
IC204
μPD7507HG-533-22
REQ
EVENT
GND
R201 10k
R202 10k
R203 10k
Q201 DTC114EK
Q202 DTC114EK
Q203 DTC144EK
D201 1S2835
Q201, 202
BUFFER
Q203
INVERTER
R241 47k
R242 47k
C201 0.047 50V F
R206 3.3k
EEP ROM
IC201 μPD6254GS-BA1
IC202 μPD6254GS-BA1
IC203 μPD6254GS-BA1
IC205 μPD6254GS-BA1
IC201 – IC203 IC205
EEP ROM
SUB RESET
RESET
SI
SO
CLK
UNREG 5V
TO
MC-67 BOARD
(1/3)(3/3)
(See page 55, 76)
L201 10μH
C222 470 10
C223 4700
C224 4700
IC206
MAIN CONTROLLER
C206 0.047
C208 10 16V
R208 47k
R209 47k
R210 47k
R247 4.7k
N.C
IR/WIRED
CGMICO RESET
SUB RESET
LCD RESET
GP1
VSS
VDD
NIM
LCDBUSY1
LCDBUSY2
LCDC/D
LCDCS1
LCDCS2
SUBPCS
CSP
CLKP
SOP
CSR
CLKR
SOR
RESET
DST
D7
D6
D5
D4
D3
D2
D1
D0
NG
BUSY
RQR
SIR
RQP
SIP
IC206
CXP80116
SUBRCS
CGMICONCS
RLANCON
CONTSON
P.SHUTTLEA/B
R.SHUTTLEA/B
C.SYNC
EXT/INT
BAT.VOL
SONY/MEMORY
AV 00
AVREF
AV SS
VTR1/2/3
JAPAN/OVERSEA
NT/PAL
P M ADC
KI2
KI1
KI0
FF REW
STOP
P LANC
R216 47k
R215 10k
R214 10k
R213 10k
R212 10k
R221 10
R240 10
R243 0
R220 47k
R219 10k
R218 10k
R217 47k
E DATA
E CLK
KO 0
KO 1
KO 2
KO 3
HP
RST
XTAL
EXTAL
R LANC/LANC+
SI
SO
CLK
POWER FAIL
R211 10k
C207 33p CH
R207 47k
X202 CSA8.00MT
C209 33p CH
CN201 2.0P
GND
DIGITAL 5V
LCD RESET
LCD C/D
LCDBUSY1
LCD CS2
LCD CS1
SUB SO
SUB CLK
TO LC-23 BOARD
W001
(See page 79)
CN202 2.0P
UNREG 5V
KI 0
KI 1
KI 2
DIGITAL 5V
GND
KO 3
KO 2
KO 1
KO 0
TO LC-23 BOARD
W002
(See page 80)

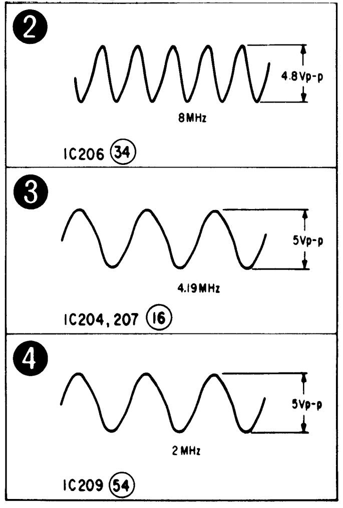

12
13
14
15
16
17
18
19
20
21
22
23
IC207
RECORDER LINCS
IC207
µPD7507HG-533-22
R231 0
X203
4.19MHz
C213
0.047
C212
10
16V
C211
33p
CH
C210
33p
CH
R228
10k
R229
10k
R232
10k
Q204
DTC114EK
Q206
DTC114EK
Q202
1S2835
Q207
DTC144EK
Q207
INVERTER
Q204,206
BUFFER
C.SYNC
EXT/ INT
TO
MC-67 BOARD (1/3)
(See page 55)
R222
47k
R247
4.7k
R248
4.7k
R224
0
R223
0
OVER
R221 10k
R240 10k
R243 0
R220 47k
R219 10k
R218 10k
R217 47k
R216 47k
R215 10k
R214 10k
R213 10k
R212 10k
R211
10k
IC210
MEMORY
IC210
CXK5864BM-10LL
C218
0.047
R239
47k
R249
100k
IC209
RECORDER LINKCS/SIRCS
LEARNING REMOTE CONTROL
IC209
CXP5116H
C217
0.047
50V
C219
10
16V
R252
47k
R253
47k
R254
47k
R255
47k
C216
100p
CH
C215
100p
CH
X204
CSA2.00MG040
IC208
IC208
TC74HC4053AF
R250
10k
R246
47k
R251
4.7k
Q208,209
BUFFER
Q208
DTA144EK
Q206
1S2835
Q209
DTA143EK
R234
1k
R235
100
R236
10k
R238
47k
C214
1000p
D207
PH310
R237
470k
IR RECEIVER
Q205
DTC144EK
INVERTER
CN203
2.0P
STOP/PAUSE
FF/REW CUE/REV
SHUTTLE A/B
LINCS
GND
DIGITAL 5V
GND
TO RC-45 BOARD
W101
(See page 85)
CN204
2.0P
GP1
SDU
CDT S ON
DIGITAL 5V
GND
CNTL-L
GND
SHUTTLE A/B
PREC L/LANC
VTR 1/2/3
SONY/ MEMORY
MODE A/B/C
TO RC-45 BOARD
W201
(See page 86)
KO 2
KO 1
KO 0

MAIN CONTROL MAIN CONTROL


17
18
19
20
21
22
23
24
25
26
27
A
B
C
D
D
E
F
G
H
J
K
L
M
N
O
P
IC210
MEMORY
IC210
CXK5864BM-10LL
C218
0.047
R239
47k
R249
100k
R231 0
4.9
REQ
EVENT
GND
Q207
DTC144EK
R232
10k
Q202
1S2835
3.9
Q207
INVERTER
C.SYNC
EXT/ INT
67 BOARD (1/3)
page 55)
IC209
RECORDER LINKCS/SIRCS
LEARNING REMOTE CONTROL
IC209
CXP5116H
VDD
NC
BUSY
NG
STOP
C217
0.047
50V
C219
10
16V
R252
47k
R253
47k
R254
47k
R255
47k
C216
100p
CH
C215
100p
CH
X204
CSA2.00MG040
C221
0.047 50V
C220
10 16V
IC208
R250
10k
R246
47k
R251
4.7k
Q208
DTA144EK
Q208,209
BUFFER
Q206
1S2835
R234
1k
R236
10k
R235
100
Q209
DTA143EK
IC208
TC74HC4053AF
R238
47k
C214
1000p
Q207
PH310
R237
470k
IR RECEIVER

No mark: E-E mode
(POWER SW: ON)

MC-67 BOARD



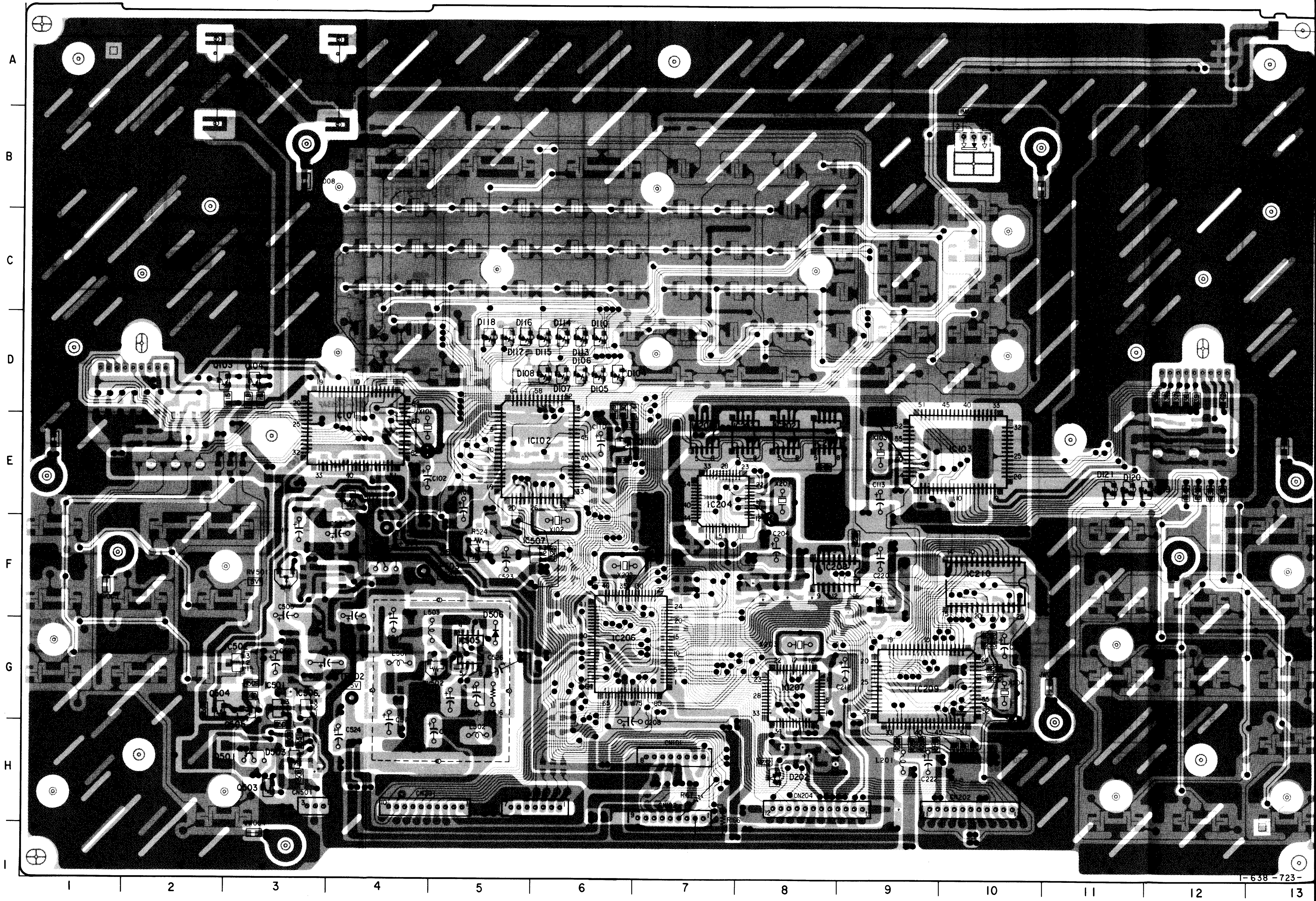
MC-67 (POWER) PRINTED WIRING BOARD

Ref. No. MC-67 Board: 2,000 series–

MC-67 BOARD

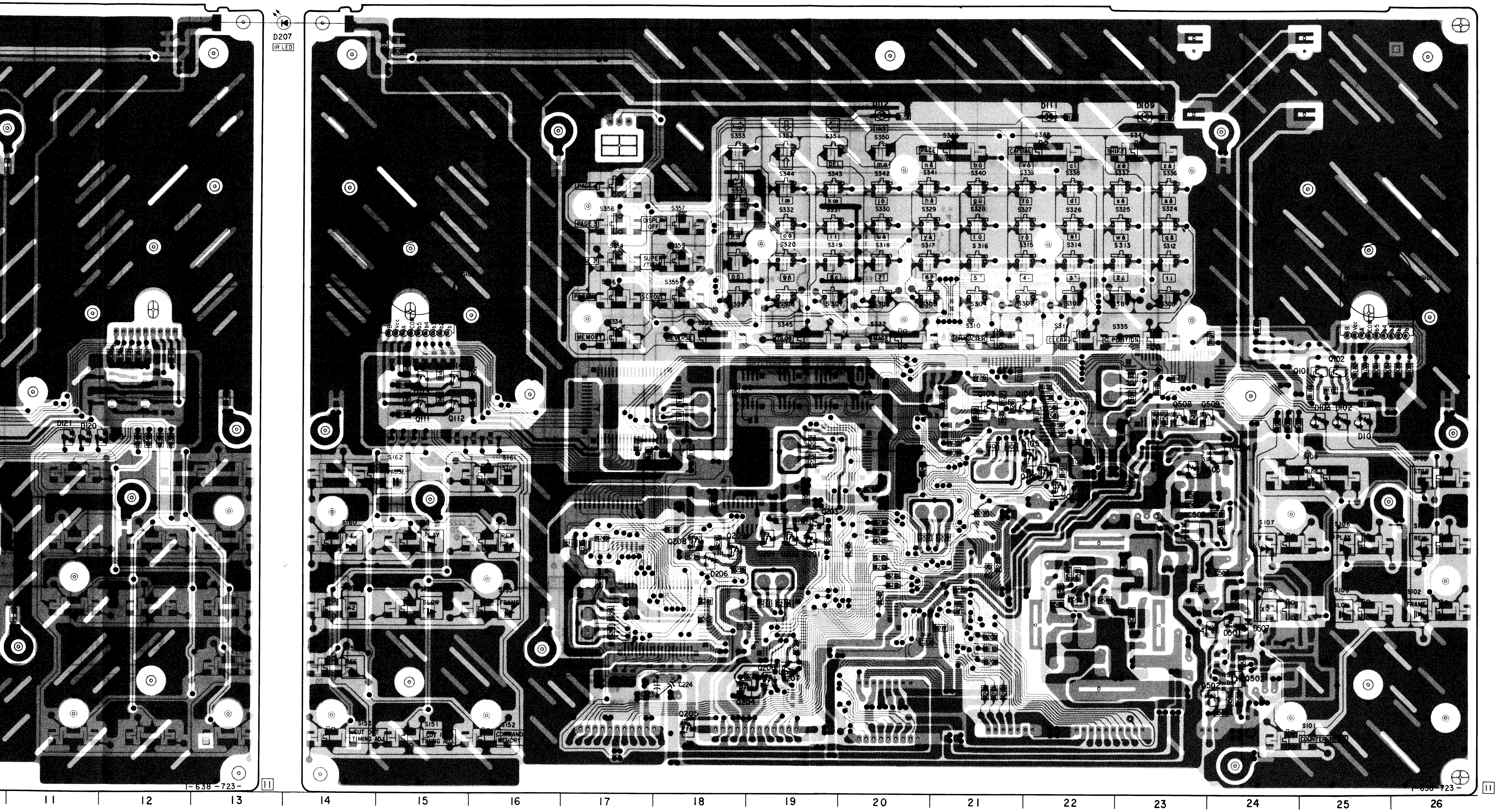
D101	E-25
D102	E-25
D103	E-25
D104	D-6
D105	D-6
D106	D-6
D107	D-6
D108	D-6
D109	B-23
D110	D-6
D111	B-22
D112	B-20
D113	D-6
D114	D-6
D115	D-6
D116	D-5
D117	D-5
D118	D-5
D119	E-11
D120	E-11
D121	E-11
D201	F-19
D202	H-8
D206	G-18
D207	A-13
D501	G-24
D502	F-23
D503	H-3
D504	G-24
D505	F-23
D507	G-24
D508	F-5
IC101	E-4
IC102	E-5
IC103	E-10
IC201	E-8
IC202	E-8
IC203	E-7
IC204	E-7
IC205	E-7
IC206	G-6
IC207	G-8
IC208	F-9
IC209	G-9
IC210	F-10
IC501	G-3
IC502	G-2
IC503	F-23
IC504	E-24
IC505	G-5
IC506	G-3
IC507	F-5
Q101	E-25
Q102	E-25
Q103	D-2
Q104	D-3
Q105	F-22
Q106	F-22
Q107	F-22
Q108	E-21
Q109	E-21
Q110	E-6
Q111	E-15
Q112	E-15
Q113	E-15
Q114	E-15
Q201	F-19
Q202	F-19
Q203	F-19
Q204	H-18
Q205	H-18
Q206	H-19
Q207	H-19
Q208	F-18
Q209	G-18
Q501	H-3
Q502	H-24
Q503	H-3
Q504	G-2
Q505	G-3
Q506	F-4
Q507	E-4
Q508	E-23
Q509	E-24

MC-67 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
IC101
IC102
IC103
IC204
IC206
IC207
IC209
IC210
D118
D116
D114
D110
D117
D115
D113
D106
D108
D107
D105
D103
D104
D121
D120
C102
X101
X102
C507
R524
C523
C204
C220
C218
C222
L201
D202
CN204
CN201
CN202
CN501
Q501
Q503
Q504
D505
C501
C506
C505
C524
D506
L503
L502
L501
RV501
RV502
1-638-723-

POWER **POWER**

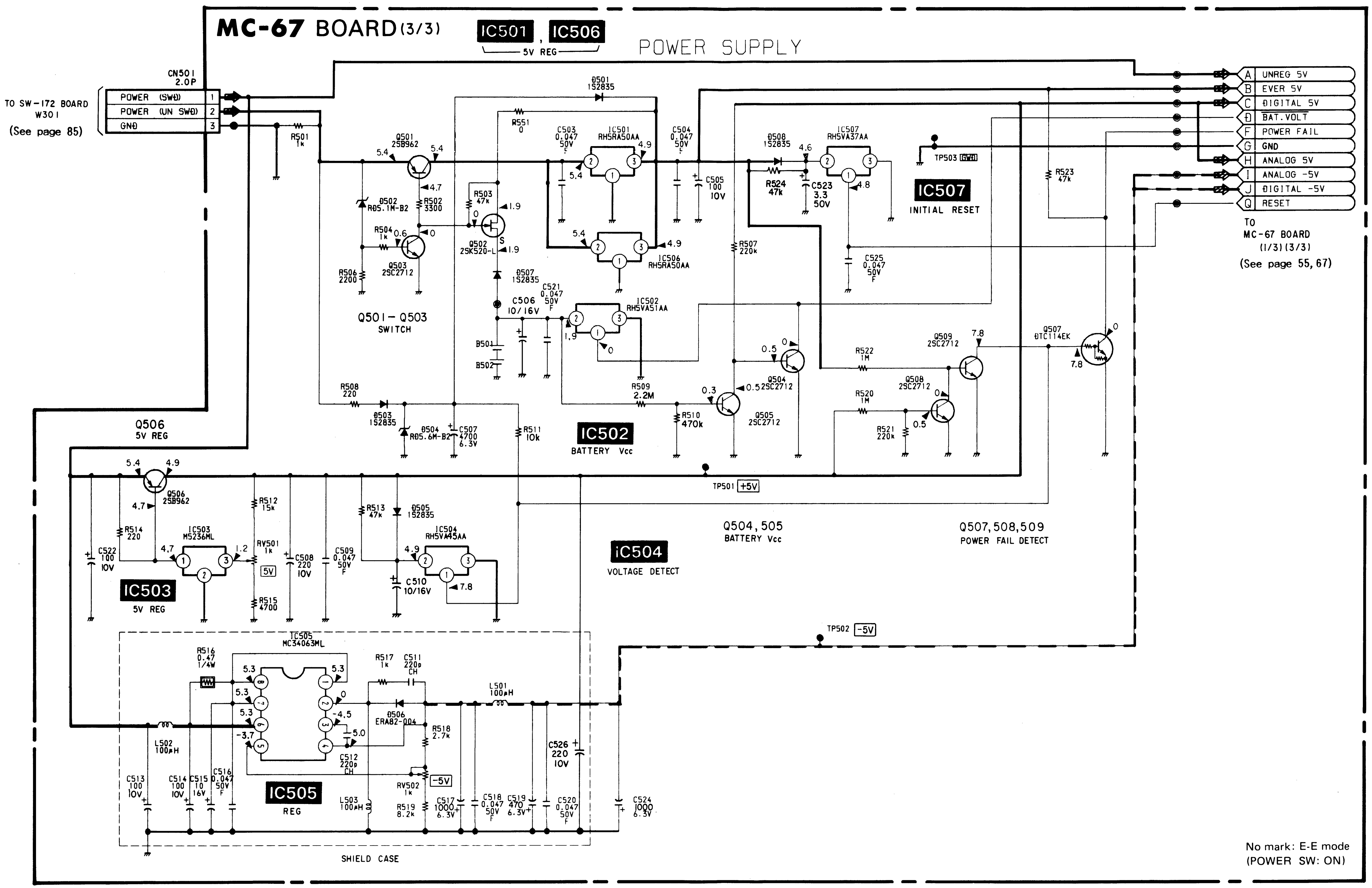
MC-67 BOARD (CONDUCTOR SIDE)


D207
IR LED
D112
D111
D109
S353
S352
S351
S350
S349
S348
S347
SPACE
CAPITAL
SHIFT
S344
S343
S342
S341
S340
S339
S338
S337
S336
S332
S331
S330
S329
S328
S327
S326
S325
S324
S356
S357
DISPLAY OFF
SUPER /TITLE
S355
SCROLL
S320
S319
S318
S317
S316
S315
S314
S313
S312
S345
S310
S335
MEMORY
REVERSE
COLOR
IMAGE
CHARACTER
CLEAR
C.POSITION
Q111
Q112
Q101
Q102
D121
D120
D102
D101
Q508
Q509
S162
S161
PAUSE
STOP
S160
PLAY
REW
SLOW
FRAME
S153
S151
S152
CUT OUT TIMING ADJ
CUT IN TIMING ADJ
COMMAND MEMORY
S107
S106
S105
S104
S103
S102
S101
COUNTER RESET
Q203
Q206
Q205
Q207
C224
C503
D501
D507
Q502
Q503
1-638-723-
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

POWER POWER

MC-67 (POWER) SCHEMATIC DIAGRAM

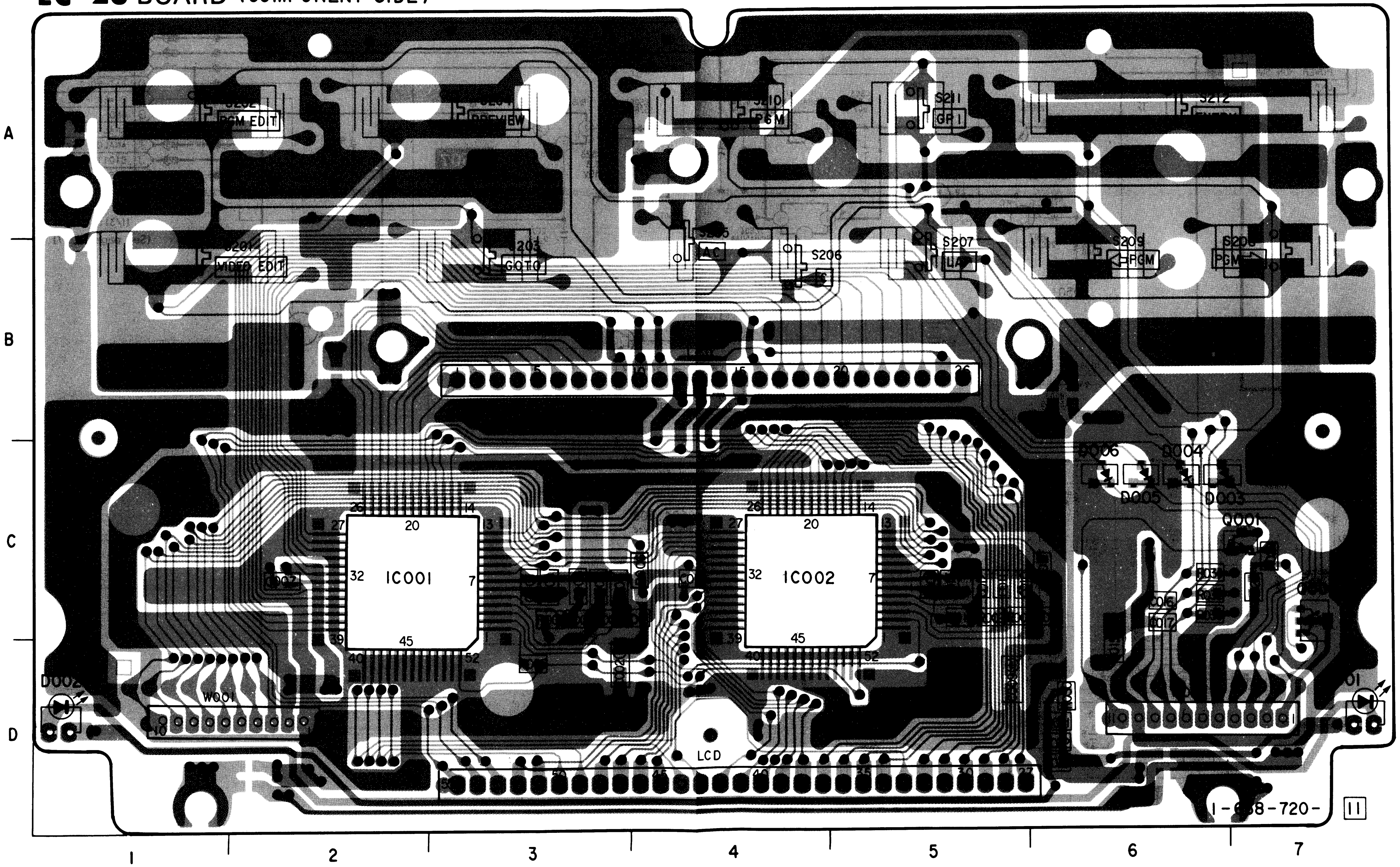
– Ref. No. MC-67 Board: 2,000 series –


MC-67 BOARD (3/3)
IC501, IC506
5V REG
POWER SUPPLY
CN501 2.0P
TO SW-172 BOARD W301
(See page 85)
POWER (SW⊕) 1
POWER (UN SW⊕) 2
GND 3
R501 1k
Q501 2SB962
Q502 RD5.1M-B2
R502 3300
R503 47k
R504 1k
Q502 2SK520-L
Q503 2SC2712
R506 2200
Q501 – Q503 SWITCH
R551 0
D501 1S2835
C503 0.047 50V
IC501 RH5RA50AA
C504 0.047 50V
C505 100 10V
IC506 RH5RA50AA
D507 1S2835
C521 0.047 50V
C506 10/16V
B501
B502
IC502 RH5VA51AA
R509 2.2M
IC502 BATTERY Vcc
D508 1S2835
IC507 RH5VA37AA
R524 47k
C523 3.3 50V
TP503
IC507 INITIAL RESET
R507 220k
C525 0.047 50V
R510 470k
Q504 2SC2712
Q505 2SC2712
R522 1M
R520 1M
R521 220k
Q508 2SC2712
Q509 2SC2712
Q507 DTC114EK
R523 47k
R508 220
D503 1S2835
D504 RD5.6M-B2
C507 4700 6.3V
R511 10k
Q506 5V REG
Q506 2SB962
R514 220
C522 100 10V
IC503 M5236ML
RV501 1k
R512 15k
C508 220 10V
C509 0.047 50V
R515 4700
IC503 5V REG
R513 47k
D505 1S2835
IC504 RH5VA45AA
C510 10/16V
TP501 +5V
IC504 VOLTAGE DETECT
Q504, 505 BATTERY Vcc
Q507, 508, 509 POWER FAIL DETECT
TP502 -5V
IC505 MC34063ML
R516 0.47 1/4W
R517 1k
C511 220p CH
D506 ERA82-004
L501 100µH
R518 2.7k
C512 220p CH
RV502 1k
R519 8.2k
L502 100µH
L503 100µH
C513 100 10V
C514 100 10V
C515 10 16V
C516 0.047 50V
C517 1000 6.3V
C518 0.047 50V
C519 470 6.3V
C520 0.047 50V
C526 220 10V
C524 1000 6.3V
IC505 REG
SHIELD CASE
A UNREG 5V
B EVER 5V
C DIGITAL 5V
D BAT.VOLT
F POWER FAIL
G GND
H ANALOG 5V
I ANALOG -5V
J DIGITAL -5V
Q RESET
TO MC-67 BOARD (1/3)(3/3)
(See page 55, 67)
No mark: E-E mode
(POWER SW: ON)

LC-23 (LCD CONTROL) PRINTED WIRING BOARD

–Ref. No. LC-23 Board: 3,000 series–

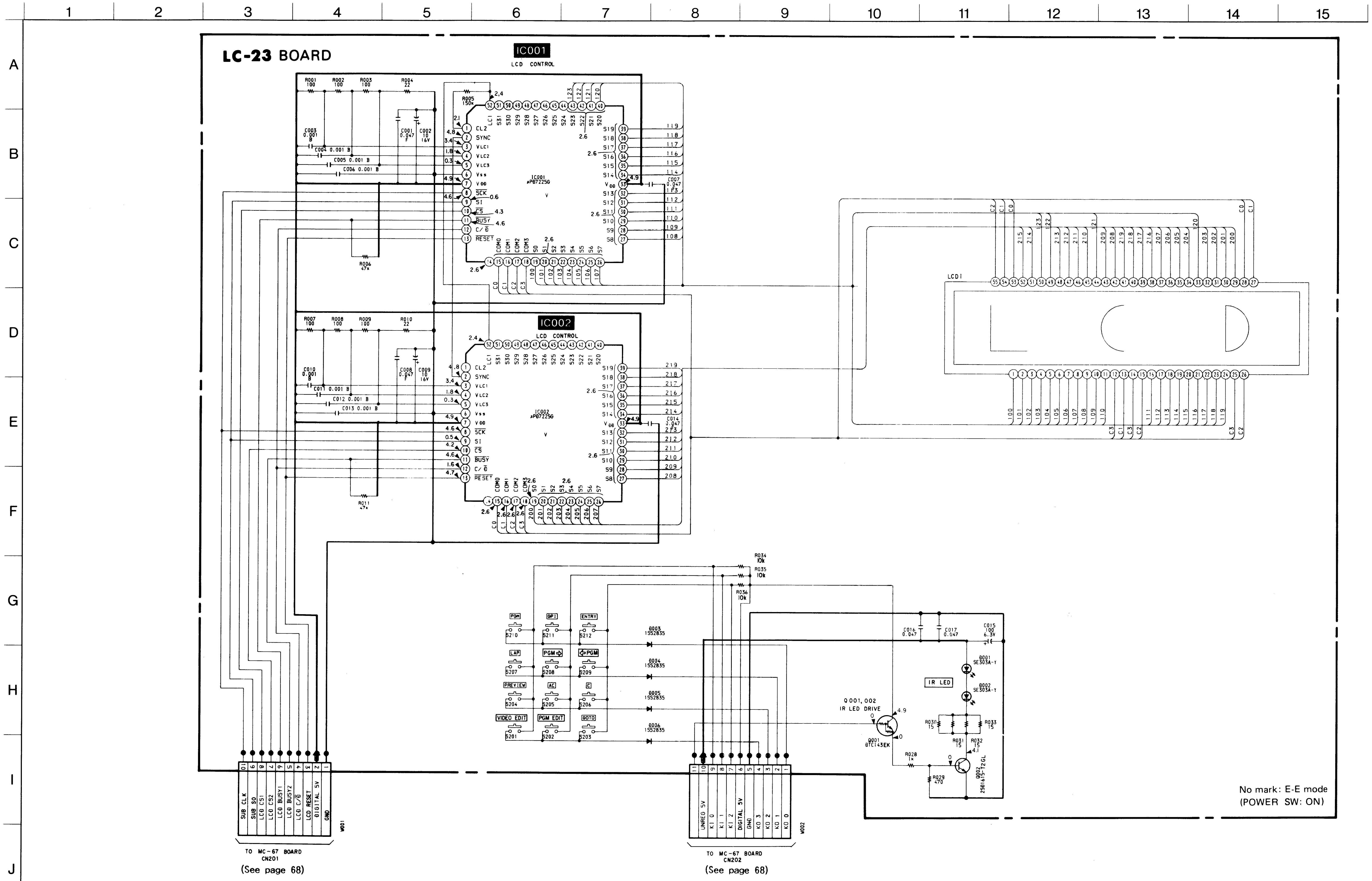
LC-23 BOARD (COMPONENT SIDE)


A
B
C
D
1
2
3
4
5
6
7
S202
PGM EDIT
S204
PREVIEW
S210
PGM
S211
GPI
S212
S201
VIDEO EDIT
S203
GOTO
S205
AC
S206
S207
UA
S209
PGM
S208
PGM
IC001
IC002
D001
D002
D003
D004
D005
D006
Q001
W001
LCD
1-658-720-11

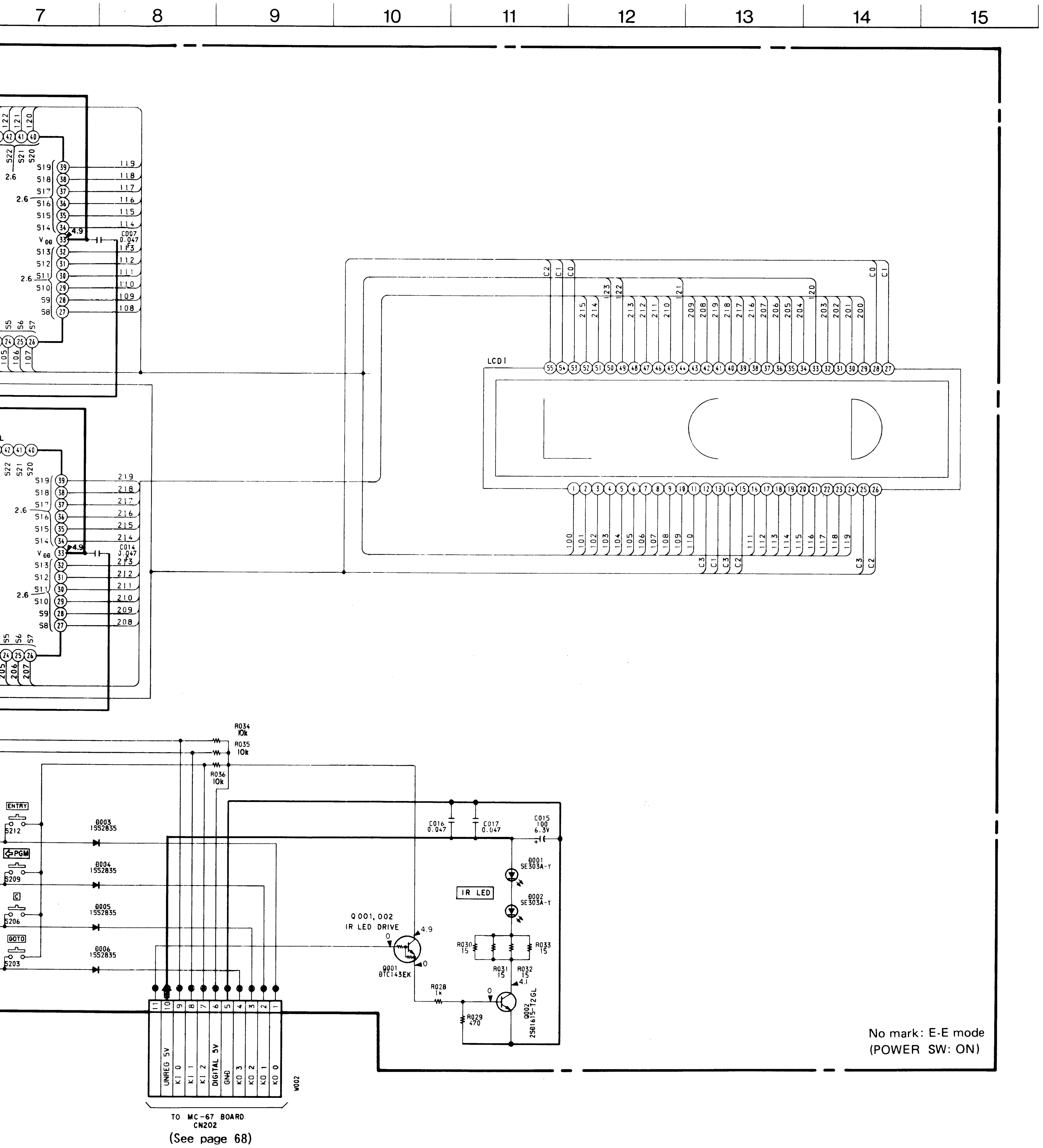
LC-23 BOARD	
D001	D-7
D002	D-1
D003	C-6
D004	C-6
D005	C-6
D006	C-6
IC001	C-2
IC002	C-4
Q001	C-7
Q002	C-7

LC-23 (LCD CONTROL) SCHEMATIC DIAGRAM

– Ref. No. LC-23 Board: 3,000 series –


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
LC-23 BOARD
IC001
LCD CONTROL
IC001
μPD7225G
R001 100
R002 100
R003 100
R004 22
R005 150k
C001 0.047 F
C002 10 16V
C003 0.001 B
C004 0.001 B
C005 0.001 B
C006 0.001 B
C007 0.047
R006 47k
CL2
SYNC
VLC1
VLC2
VLC3
Vss
VDD
SCK
SI
CS
BUSY
C/D
RESET
COM0
COM1
COM2
COM3
IC002
LCD CONTROL
IC002
μPD7225G
R007 100
R008 100
R009 100
R010 22
C008 0.047 F
C009 10 16V
C010 0.001 B
C011 0.001 B
C012 0.001 B
C013 0.001 B
C014 0.047
R011 47k
LCD1
LCD
PGM
GPI
ENTRY
S210
S211
S212
LAP
PGM ⇨
⇦ PGM
S207
S208
S209
PREVIEW
AC
C
S204
S205
S206
VIDEO EDIT
PGM EDIT
GOTO
S201
S202
S203
D003 1SS283S
D004 1SS283S
D005 1SS283S
D006 1SS283S
R034 10k
R035 10k
R036 10k
C016 0.047
C017 0.047
C015 100 6.3V
D001 SE303A-Y
D002 SE303A-Y
IR LED
Q001, 002
IR LED DRIVE
Q001 DTC143EK
Q002 2SD1615-T2GL
R028 1k
R029 470
R030 15
R031 15
R032 15
R033 15
SUB CLK
SUB SO
LCD CS1
LCD CS2
LCD BUSY1
LCD BUSY2
LCD C/D
LCD RESET
DIGITAL 5V
GND
W001
TO MC-67 BOARD
CN201
(See page 68)
UNREG 5V
KI 0
KI 1
KI 2
DIGITAL 5V
GND
KO 3
KO 2
KO 1
KO 0
W002
TO MC-67 BOARD
CN202
(See page 68)

No mark: E-E mode
(POWER SW: ON)


7
8
9
10
11
12
13
14
15
LCD1
C007
0.047
C014
0.047
R034
10k
R035
10k
R036
10k
ENTRY
S212
PGM
S209
S206
GOTO
S203
D003
1SS283S
D004
1SS283S
D005
1SS283S
D006
1SS283S
C016
0.047
C017
0.047
C015
100
6.3V
D001
SE303A-Y
D002
SE303A-Y
IR LED
Q001, 002
IR LED DRIVE
Q001
DTC143EK
Q002
2SD1615-T2GL
R028
1k
R029
470
R030
15
R031
15
R032
15
R033
15
UNREG 5V
KI 0
KI 1
KI 2
DIGITAL 5V
GND
KO 3
KO 2
KO 1
KO 0
W002

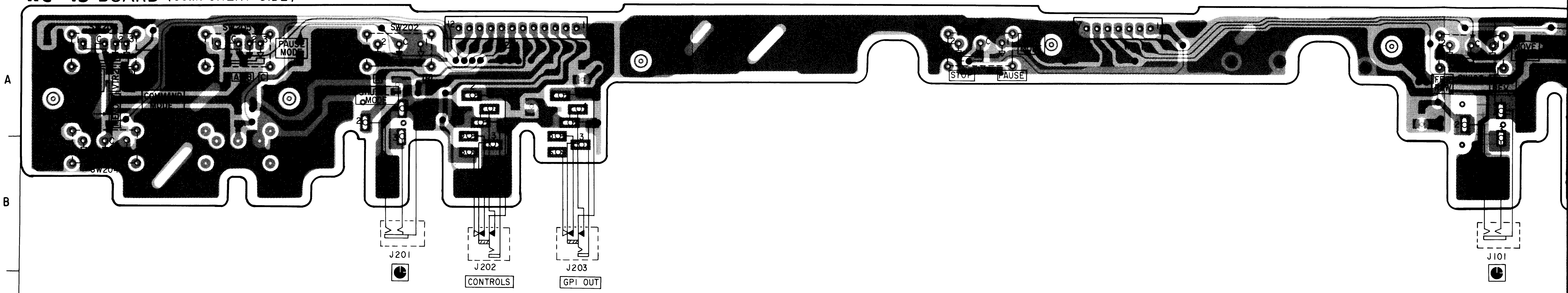
No mark: E-E mode
(POWER SW: ON)

TO MC-67 BOARD
CN202
(See page 68)

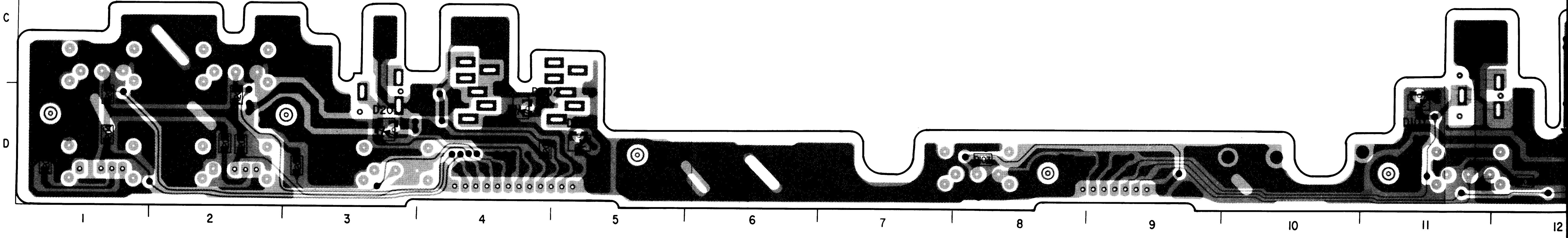
RC-45 (MODE SWITCH, CONTROL L/S), SW-172 (POWER SWITCH) PRINTED WIRING BOARDS

–Ref. No. RC-45 Board: 4,000 series, SW-172 Board: 5,000 series–

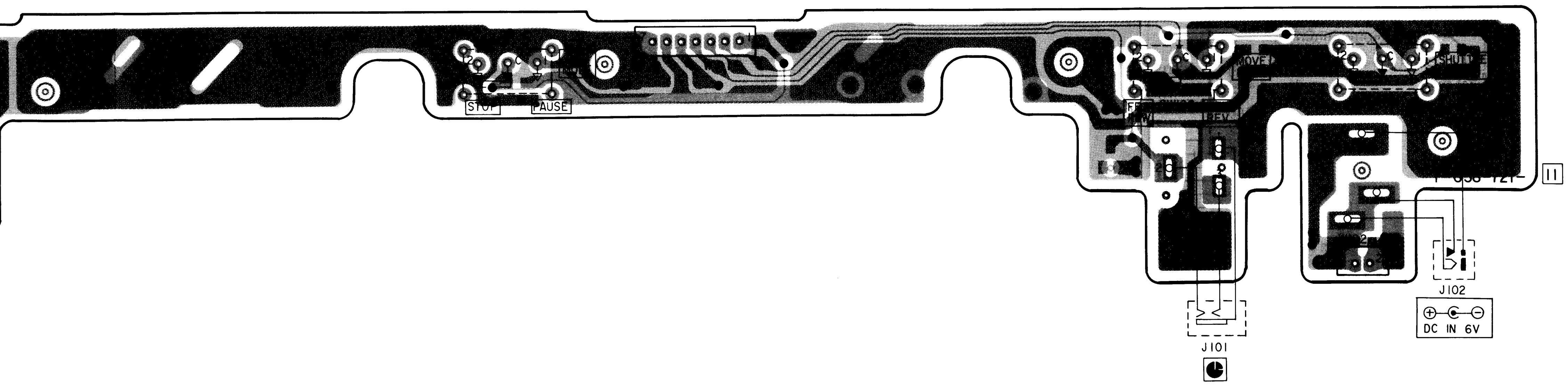
RC-45 BOARD (COMPONENT SIDE)

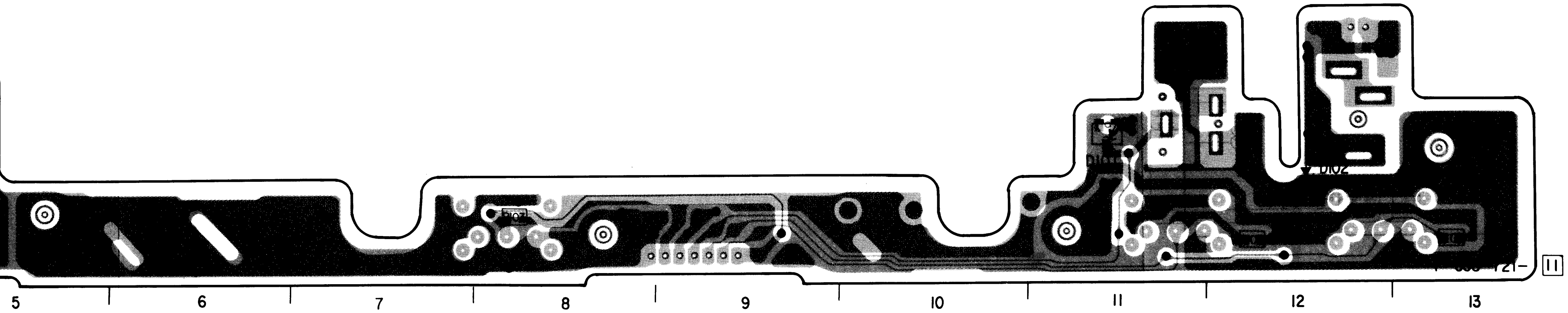

A
B
SW202
PAUSE MODE
COMMAND MODE
STOP
PAUSE
MOVE
J201
J202
CONTROLS
J203
GPI OUT
J101

RC-45 BOARD (CONDUCTOR SIDE)

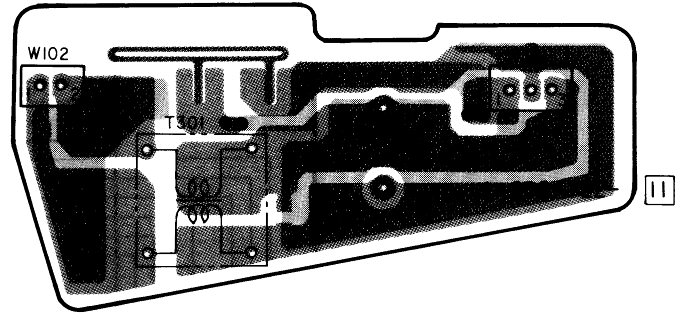

C
D
D201
D202
D203
D101
D102
1
2
3
4
5
6
7
8
9
10
11
12

RC-45	BOARD
D101	D-11
D102	D-12
D201	D-3
D202	D-4
D203	D-5

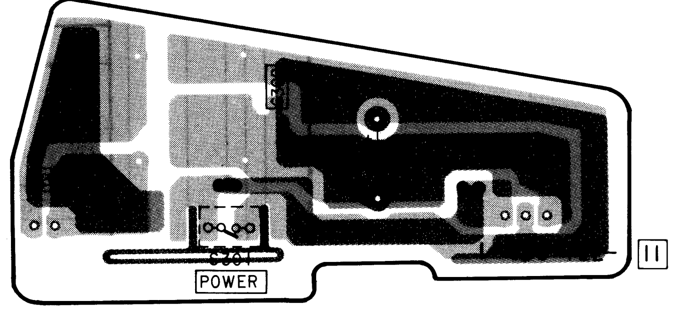

STOP
PAUSE
MOVE
SHUTTLE
FF
REV
J101
J102
DC IN 6V
11


D102
D101
11
5
6
7
8
9
10
11
12
13

SW-172 BOARD (COMPONENT SIDE)

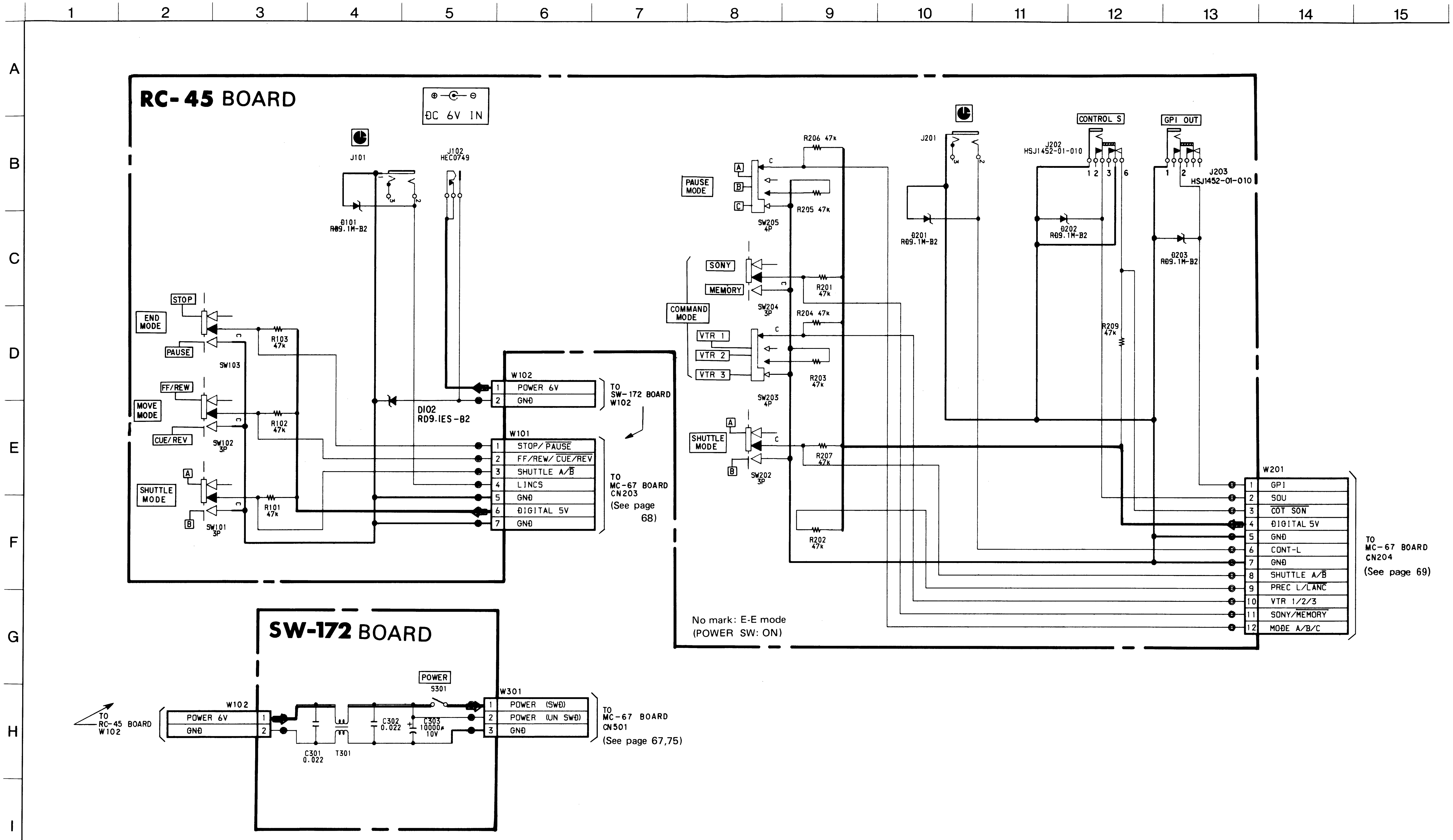

W102
T301
11

SW-172 BOARD (CONDUCTOR SIDE)


S301
POWER
11

RC-45 (MODE SWITCH, CONTROL L/S), SW-172 (POWER SWITCH) SCHEMATIC DIAGRAM

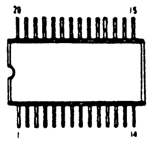
–Ref. No. RC-45 Board: 4,000 series, SW-172 Board: 5,000 series–


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
RC-45 BOARD
DC 6V IN
J101
J102
HEC0749
D101
R09.1M-B2
STOP
END MODE
PAUSE
SW103
R103
47k
FF/REW
MOVE MODE
CUE/REV
SW102
3P
R102
47k
A
SHUTTLE MODE
B
SW101
3P
R101
47k
D102
RD9.1ES-B2
W102
1 POWER 6V
2 GND
TO SW-172 BOARD W102
W101
1 STOP/ PAUSE
2 FF/REW/ CUE/REV
3 SHUTTLE A/B
4 LINCS
5 GND
6 DIGITAL 5V
7 GND
TO MC-67 BOARD CN203
(See page 68)
PAUSE MODE
A
B
C
SW205
4P
R206 47k
R205 47k
SONY
MEMORY
COMMAND MODE
SW204
3P
R201
47k
R204 47k
VTR 1
VTR 2
VTR 3
SW203
4P
R203
47k
SHUTTLE MODE
A
B
SW202
3P
R207
47k
R202
47k
J201
D201
R09.1M-B2
CONTROL S
J202
HSJ1452-01-010
1 2 3 6
D202
R09.1M-B2
R209
47k
GPI OUT
1 2
J203
HSJ1452-01-010
D203
R09.1M-B2
W201
1 GPI
2 SOU
3 COT SON
4 DIGITAL 5V
5 GND
6 CONT-L
7 GND
8 SHUTTLE A/B
9 PREC L/LANC
10 VTR 1/2/3
11 SONY/MEMORY
12 MODE A/B/C
TO MC-67 BOARD CN204
(See page 69)
SW-172 BOARD
TO RC-45 BOARD W102
W102
1 POWER 6V
2 GND
C301
0.022
T301
C302
0.022
C303
10000μ
10V
POWER
S301
W301
1 POWER (SWD)
2 POWER (UN SWD)
3 GND
TO MC-67 BOARD CN501
(See page 67,75)

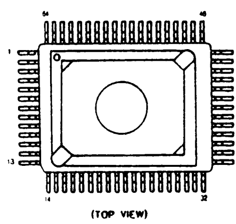
No mark: E-E mode
(POWER SW: ON)

4-3. SEMICONDUCTOR LEAD LAYOUTS

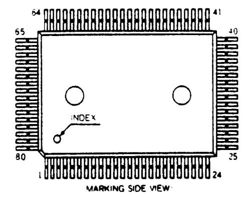
CX-7930A
CXK5827H-12L
CXK5864BM-10L



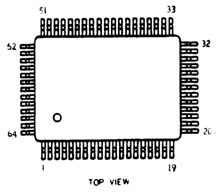
CXP5084H-619Q
CXP5116H-601Q



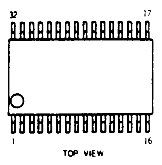
CXP80116-824Q


INDEX
MARKING SIDE VIEW

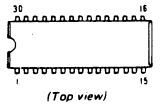
CXP80316-012Q
MB670493



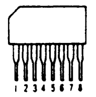
M50455-105FP



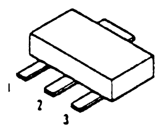
M51279FP



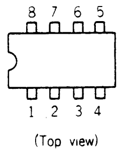
M51848L



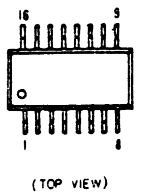
M5236ML
RH5RA50A
RH5VA45AB
RH5V51AB



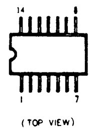
MC34063ML


8 7 6 5
1 2 3 4
(Top view)

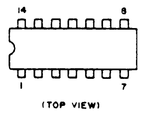
TC4053BF
TC74HC123F
TC74HC157F
TC74HC4053AF


16
9
1
8
(TOP VIEW)

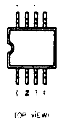
MC1496MR
TC74HC00F
TC74HC02F
TC74HC04F
TC74HC74F
μPC339G2


14
8
1
7
(TOP VIEW)

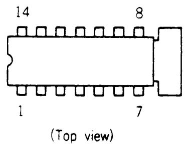
TC74HCU04F


14
8
1
7
(TOP VIEW)

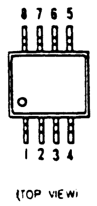
TL082CPS



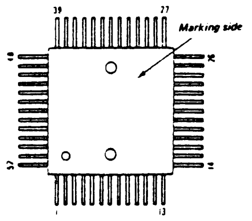
μPC319G2


14
8
1
7
(Top view)

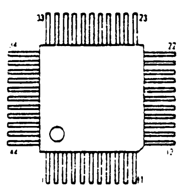
μPC4558G2
μPD6254GS-BA1-E2


8 7 6 5
1 2 3 4
(TOP VIEW)

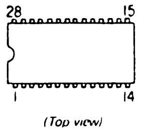
μPD7225G-00


Marking side

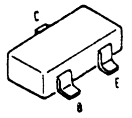
μPD7507HG-533-22



V7040


28
15
1
14
(Top view)

DTA143EK
DTA144EK
DTC114EK
DTC143EK
DTC143TK
DTC144EK
2SA1162
2SC2712-G
2SC2712G-T



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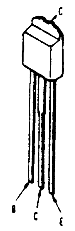

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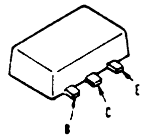
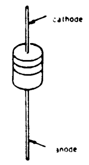
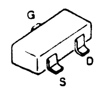


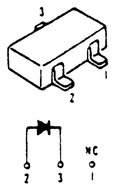
ERA82-004
RD9.1ES-B2


cathode
anode

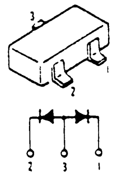
2SK160-K5
2SK425-X13



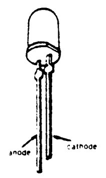
RD5.1M-B2
RD5.6M-B2
RD9.1M-B2



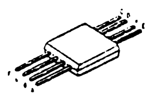
1S2835
1S2836



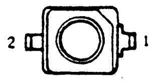
SE303AY


anode
cathode

PH310



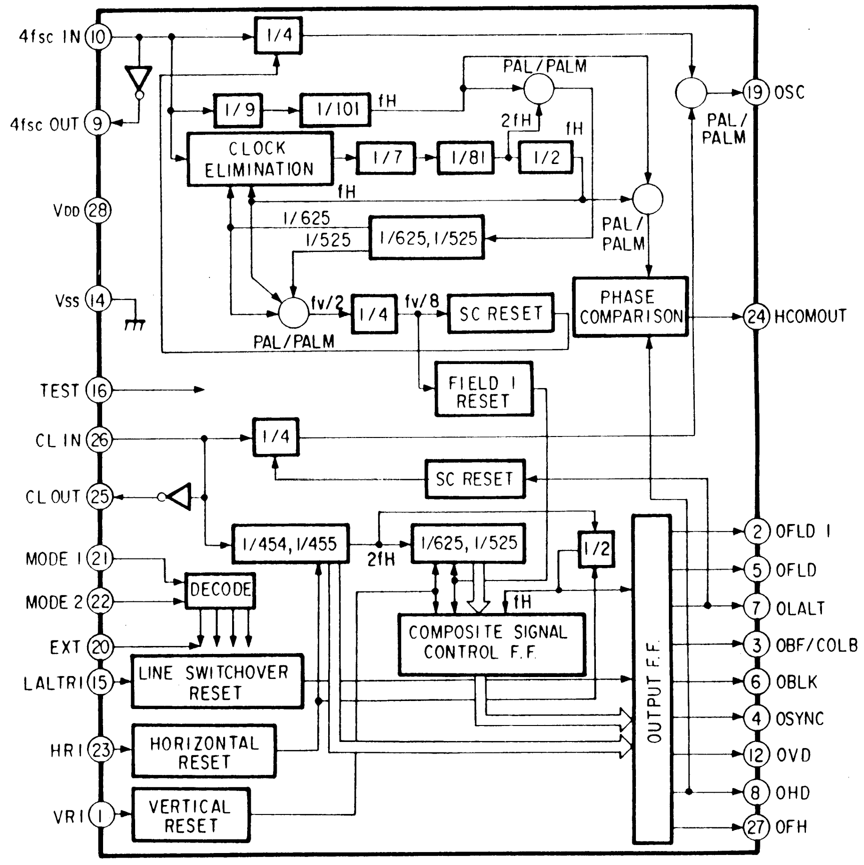
SLM-1251MW



1. Cathode
2. Anode

4-4. IC BLOCK DIAGRAM

CX7930A


4fsc IN 10
4fsc OUT 9
VDD 28
Vss 14
TEST 16
CL IN 26
CL OUT 25
MODE 1 21
MODE 2 22
EXT 20
LALTRI 15
HRI 23
VRI 1
1/4
1/9
1/101
fH
PAL/PALM
2fH
fH
CLOCK ELIMINATION
1/7
1/81
1/2
fH
1/625
1/525
1/625, 1/525
PAL/PALM
fv/2
1/4
fv/8
SC RESET
PHASE COMPARISON
PAL/PALM
FIELD I RESET
1/4
SC RESET
1/454, 1/455
2fH
1/625, 1/525
1/2
fH
DECODE
COMPOSITE SIGNAL CONTROL F.F
LINE SWITCHOVER RESET
HORIZONTAL RESET
VERTICAL RESET
OUTPUT F.F.
19 OSC
PAL/PALM
24 HCOMOUT
2 OFLD I
5 OFLD
7 OLALT
3 OBF/COLB
6 OBLK
4 OSYNC
12 OVD
8 OHD
27 OFH

SECTION 5
EXPLODED VIEW

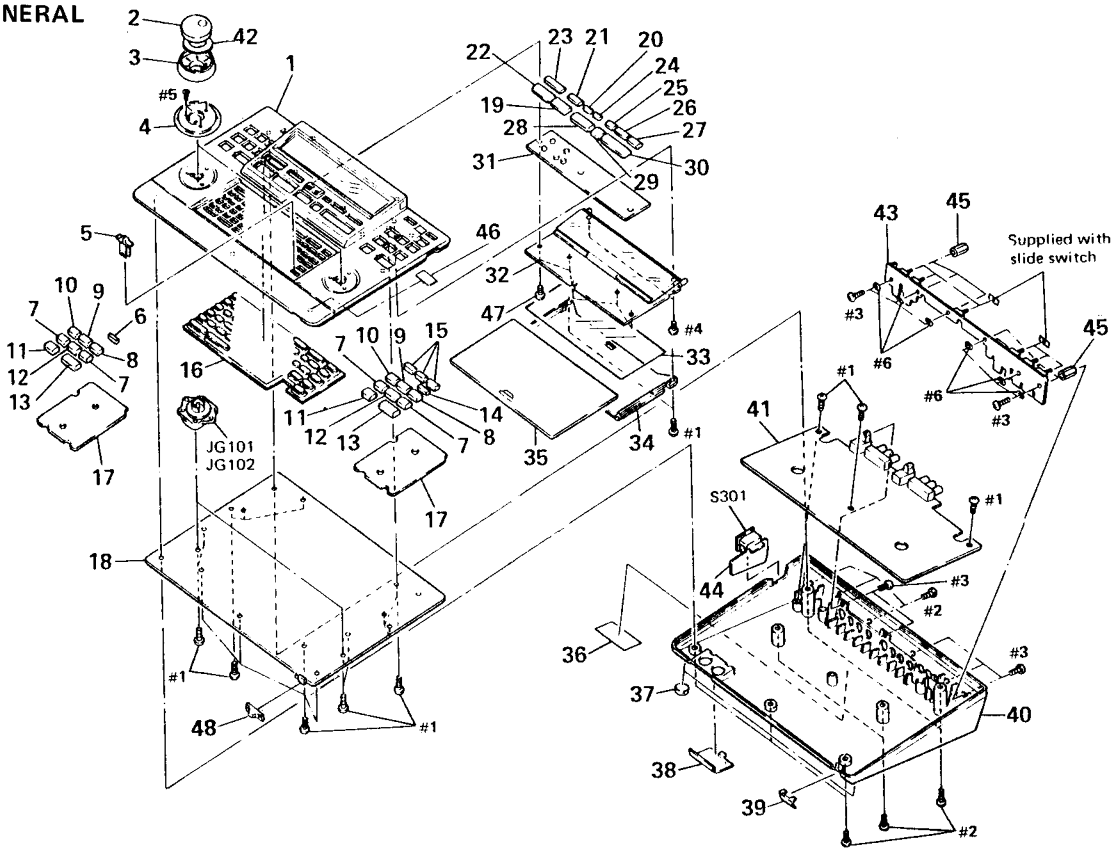
NOTE:

- –XX, –X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts color ↑ Cabinet's color
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

1. GENERAL



Ref.No.	Part No.	Description	Remark
1	A-7091-510-A	COVER ASSY, UPPER	
2	3-941-917-11	DIAL, JOG	
3	3-941-921-01	RING, SHUTTLE	
4	3-941-923-01	BASE, J/S	
5	2-131-233-01	KNOB	
6	2-131-237-01	KEY TOP (COUNTER RESET)	
7	2-135-431-01	KEY TOP (REW-FF)	
8	2-135-432-01	KEY TOP (X2)	
9	2-135-433-01	KEY TOP (SLOW)	
10	2-135-434-01	KEY TOP (FRAME)	
11	2-135-429-01	KEY TOP (STOP)	
12	2-135-430-01	KEY TOP (PLAY)	
13	2-135-428-01	KEY TOP (PAUSE)	
14	2-131-236-01	KEY TOP (RECORDING)	
15	2-131-238-01	KEY TOP (TA. MEMORY)	
16	2-131-249-01	RUBBER (TITLE), CONDUCTIVE	
17	2-131-247-01	RUBBER (REC/PB), CONDUCTIVE	
18	* A-7062-692-A	MC-67 (P7) BOARD, COMPLETE	
19	2-135-423-01	KEY TOP (PREVIEW)	
20	2-135-424-01	KEY TOP (AC)	
21	2-135-425-01	KEY TOP (GOTO)	
22	2-135-426-01	KEY TOP (PGM EDIT)	
23	2-135-427-01	KEY TOP (VIDEO EDIT)	
24	2-135-421-01	KEY TOP (C)	
25	2-135-422-01	KEY TOP (LAP)	
26	2-135-417-01	KEY TOP (PGM DOWN)	
27	2-135-418-01	KEY TOP (PGM UP)	
28	3-941-918-01	KEY TOP (PGM)	
29	3-941-919-01	KEY TOP (GPI)	
30	3-941-922-01	KEY TOP (ENTRY)	
31	2-131-248-01	RUBBER (EDITING), CONDUCTIVE	
32	* A-7071-388-A	LC-23 BOARD, COMPLETE	
33	2-135-448-01	SPACER	
34	2-131-251-01	RETAINER, COVER	
35	2-131-250-01	COVER	
36	* 3-941-799-01	LABEL, MODEL NUMBER	
37	2-131-235-01	SPACER (RUBBER FOOT)	
38	2-131-244-01	LID, BATTERY CASE	
39	2-131-241-01	FILTER (RAY CATCHER)	
40	A-7091-511-A	COVER ASSY, LOWER	
41	* A-7061-514-A	VI-60 BOARD, COMPLETE	
42	3-942-932-01	SPACER, JOG DIAL	
43	* A-7071-389-A	RC-45 BOARD, COMPLETE	
44	* A-7071-390-A	SW-172 BOARD, COMPLETE	
45	3-942-484-01	SPACER (M)	
46	* 3-703-710-21	STICKER, SONY SYMBOL (12)	
47	2-135-456-01	SCREW, SPECIAL	
48	2-131-234-01	FILTER (LED)	
JG101	1-572-711-11	SWITCH, ROTARY (ENCODER) (PLAYER)	
JG102	1-572-711-11	SWITCH, ROTARY (ENCODER) (RECORDER)	
S301	1-571-843-11	SWITCH, SEESAW (POWER)	

LC-23

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- −XX, −X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remark
	* A-7071-388-A	LC-23 BOARD, COMPLETE			
		*********************			
	* 2-131-243-01	SPACER			
		< CAPACITOR >			
C001	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C002	1-124-779-00	ELECT CHIP	10uF	20%	16v
C003	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C004	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C005	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C006	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C007	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C008	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C009	1-124-779-00	ELECT CHIP	10uF	20%	16v
C010	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C011	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C012	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C013	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C014	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C015	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C016	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C017	1-163-035-00	CERAMIC CHIP	0.047uF		50V
		< DIODE >			
D001	8-719-107-82	DIODE	SE303AY		
D002	8-719-107-82	DIODE	SE303AY		
D003	8-719-104-34	DIODE	1S2836		
D004	8-719-104-34	DIODE	1S2836		
D005	8-719-104-34	DIODE	1S2836		
D006	8-719-104-34	DIODE	1S2836		

Ref. No.	Part No.	Description				Remark
		< IC >				
IC001	8-759-103-72	IC	uPD7225G-01			
IC002	8-759-103-72	IC	uPD7225G-01			
		< DISPLAY PANEL >				
LCD1	1-809-304-11	DISPLAY PANEL, LIQUID CRYSTAL				
		< TRANSISTOR >				
Q001	8-729-923-80	TRANSISTOR	DTC143EK			
Q002	8-729-106-68	TRANSISTOR	2SD1615A-GP			
		< RESISTOR >				
R001	1-216-025-00	METAL CHIP	100	5%	1/10W	
R002	1-216-025-00	METAL CHIP	100	5%	1/10W	
R003	1-216-025-00	METAL CHIP	100	5%	1/10W	
R004	1-216-009-00	METAL CHIP	22	5%	1/10W	
R005	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R006	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R007	1-216-025-00	METAL CHIP	100	5%	1/10W	
R008	1-216-025-00	METAL CHIP	100	5%	1/10W	
R009	1-216-025-00	METAL CHIP	100	5%	1/10W	
R010	1-216-009-00	METAL CHIP	22	5%	1/10W	
R011	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R028	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R029	1-216-041-00	METAL CHIP	470	5%	1/10W	
R030	1-216-005-00	METAL CHIP	15	5%	1/10W	
R031	1-216-005-00	METAL CHIP	15	5%	1/10W	
R032	1-216-005-00	METAL CHIP	15	5%	1/10W	
R033	1-216-005-00	METAL CHIP	15	5%	1/10W	
R034	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R035	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R036	1-216-073-00	METAL CHIP	10K	5%	1/10W	

****

Ref. No.	Part No.	Description			Remark
	* A-7062-692-A	MC-67 (P7) BOARD, COMPLETE **************************			
		< BATTERY HOLDER >			
B501	1-550-104-21	HOLDER, BATTERY			
B502	1-550-104-21	HOLDER, BATTERY			
		< CAPACITOR >			
C101	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C102	1-126-157-11	ELECT	10uF	20%	16V
C103	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C104	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C105	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C106	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C107	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C108	1-126-157-11	ELECT	10uF	20%	16V
C109	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C110	1-124-465-00	ELECT	0.47uF	20%	50V
C111	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C112	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C113	1-126-157-11	ELECT	10uF	20%	16V
C114	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C115	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C116	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C201	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C202	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C203	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C204	1-126-157-11	ELECT	10uF	20%	16V
C205	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C206	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C207	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C208	1-126-157-11	ELECT	10uF	20%	16V
C209	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C210	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C211	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C212	1-126-157-11	ELECT	10uF	20%	16V
C213	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C214	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C215	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C216	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C217	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C218	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C219	1-126-157-11	ELECT	10uF	20%	16V
C220	1-126-157-11	ELECT	10uF	20%	16V
C221	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C222	1-124-472-11	ELECT	470uF	20%	10V
C223	1-126-650-11	ELECT	4700uF	20%	6.3V
C224	1-126-650-11	ELECT	4700uF	20%	6.3V
C503	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C504	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C505	1-124-443-00	ELECT	100uF	20%	10V
C507	1-126-650-11	ELECT	4700uF	20%	6.3V
C508	1-126-176-11	ELECT	220uF	20%	10V
C509	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C511	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C512	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C513	1-124-443-00	ELECT	100uF	20%	10V
C514	1-124-443-00	ELECT	100uF	20%	10V
C515	1-126-157-11	ELECT	10uF	20%	16V
C516	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C517	1-124-471-00	ELECT	1000uF	20%	6.3V
C518	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C519	1-124-518-11	ELECT	470uF	20%	6.3V
C520	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C521	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C522	1-124-443-00	ELECT	100uF	20%	10V
C523	1-126-162-11	ELECT	3.3uF	20%	50V
C524	1-124-471-00	ELECT	1000uF	20%	6.3V
C525	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C526	1-126-176-11	ELECT	220uF	20%	10V
		< CONNECTOR >			
CN101	* 1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P			
CN102	* 1-564-711-11	PIN, CONNECTOR (SMALL TYPE) 9P			
CN201	* 1-564-712-11	PIN, CONNECTOR (SMALL TYPE) 10P			
CN202	* 1-564-713-11	PIN, CONNECTOR (SMALL TYPE) 11P			
CN203	* 1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CN204	* 1-564-714-11	PIN, CONNECTOR (SMALL TYPE) 12P			
CN501	* 1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
		< DIODE >			
D101	8-719-104-34	DIODE	1S2836		
D102	8-719-104-34	DIODE	1S2836		
D103	8-719-104-34	DIODE	1S2836		
D104	8-719-104-34	DIODE	1S2836		
D105	8-719-104-34	DIODE	1S2836		
D106	8-719-104-34	DIODE	1S2836		
D107	8-719-104-34	DIODE	1S2836		
D108	8-719-104-34	DIODE	1S2836		
D109	8-719-989-60	DIODE	SLM-1251MW		
D110	8-719-104-34	DIODE	1S2836		
D111	8-719-989-60	DIODE	SLM-1251MW		
D112	8-719-989-60	DIODE	SLM-1251MW		
D113	8-719-104-34	DIODE	1S2836		
D114	8-719-104-34	DIODE	1S2836		
D115	8-719-104-34	DIODE	1S2836		

Ref.No.	Part No.	Description	Remark
D116	8-719-104-34	DIODE 1S2836	
D117	8-719-104-34	DIODE 1S2836	
D118	8-719-104-34	DIODE 1S2836	
D119	8-719-104-34	DIODE 1S2836	
D120	8-719-104-34	DIODE 1S2836	
D121	8-719-104-34	DIODE 1S2836	
D201	8-719-104-34	DIODE 1S2836	
D202	8-719-104-34	DIODE 1S2836	
D206	8-719-104-34	DIODE 1S2836	
D207	8-719-124-13	PHOTO DIODE PH310	
D501	8-719-104-34	DIODE 1S2836	
D502	8-719-105-82	DIODE RD5.1M-B2	
D503	8-719-104-34	DIODE 1S2836	
D504	8-719-105-91	DIODE RD5.6M-B2	
D505	8-719-104-34	DIODE 1S2836	
D506	8-719-913-44	DIODE ERA82-004	
D507	8-719-104-34	DIODE 1S2836	
D508	8-719-104-34	DIODE 1S2836	

< IC >

Ref.No.	Part No.	Description	Remark
IC101	8-752-818-17	IC CXP5084H-619Q	
IC102	8-752-818-20	IC CXP80316-012Q	
IC103	8-752-818-17	IC CXP5084H-619Q	
IC201	8-759-720-78	IC uPD6254GS-BA1-E2	
IC202	8-759-720-78	IC uPD6254GS-BA1-E2	
IC203	8-759-720-78	IC uPD6254GS-BA1-E2	
IC204	8-759-143-22	IC uPD7507HG-533-22	
IC205	8-759-720-78	IC uPD6254GS-BA1-E2	
IC206	8-752-830-76	IC CXP80116-836Q	
IC207	8-759-143-22	IC uPD7507HG-533-22	
IC208	8-759-230-99	IC TC74HC4053AF	
IC209	8-752-818-18	IC CXP5116H-601Q	
IC210	8-752-330-98	IC CXK5864BM-10L	
IC501	8-759-948-48	IC RH5RA50A	
IC502	8-759-980-74	IC RH5VA51AB	
IC503	8-759-630-27	IC M5236ML	
IC504	8-759-981-43	IC RH5VA45AB	
IC505	8-759-013-25	IC MC34063M	
IC506	8-759-948-48	IC RH5RA50A	
IC507	8-759-981-43	IC RH5VA45AB	

< SWITCH >

Ref.No.	Part No.	Description	Remark
JG101	1-572-711-11	SWITCH, ROTARY (ENCODER) (PLAYER)	
JG102	1-572-711-11	SWITCH, ROTARY (ENCODER) (RECORDER)	

< COIL >

Ref.No.	Part No.	Description	Remark
L501	1-410-933-11	INDUCTOR 100uH	
L502	1-410-933-11	INDUCTOR 100uH	
L503	1-410-933-11	INDUCTOR 100uH	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q101	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q102	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q103	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q104	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q105	8-729-900-53	TRANSISTOR DTC114EK	
Q106	8-729-900-53	TRANSISTOR DTC114EK	
Q107	8-729-900-53	TRANSISTOR DTC114EK	
Q108	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q109	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q110	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q111	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q112	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q113	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q114	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q201	8-729-900-53	TRANSISTOR DTC114EK	
Q202	8-729-900-53	TRANSISTOR DTC114EK	
Q203	8-729-901-01	TRANSISTOR DTC144EK	
Q204	8-729-900-53	TRANSISTOR DTC114EK	
Q205	8-729-901-01	TRANSISTOR DTC144EK	
Q206	8-729-900-53	TRANSISTOR DTC114EK	
Q207	8-729-901-01	TRANSISTOR DTC144EK	
Q208	8-729-901-06	TRANSISTOR DTA144EK	
Q209	8-729-901-47	TRANSISTOR DTA143EK	
Q503	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q504	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q505	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q507	8-729-900-53	TRANSISTOR DTC114EK	
Q508	8-729-230-49	TRANSISTOR 2SC2712-G-T	
Q509	8-729-230-49	TRANSISTOR 2SC2712-G-T	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R101	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R102	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R103	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R104	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R105	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R106	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R107	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R108	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R109	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R110	1-216-045-00	METAL CHIP 680 5% 1/10W	
R111	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R112	1-216-103-00	METAL CHIP 180K 5% 1/10W	
R113	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R114	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R115	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R116	1-216-103-00	METAL CHIP 180K 5% 1/10W	

Ref. No.	Part No.	Description				Remark
R117	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R118	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R119	1-216-043-00	METAL CHIP	560	5%	1/10W	
R120	1-216-043-00	METAL CHIP	560	5%	1/10W	
R121	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R122	1-216-043-00	METAL CHIP	560	5%	1/10W	
R123	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R124	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R126	1-216-025-00	METAL CHIP	100	5%	1/10W	
R127	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R128	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R129	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R130	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R131	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R132	1-216-025-00	METAL CHIP	100	5%	1/10W	
R133	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R134	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R135	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R136	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R137	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R138	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R139	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R140	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R141	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R142	1-216-045-00	METAL CHIP	680	5%	1/10W	
R143	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R144	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R145	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R146	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R147	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R148	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R149	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R150	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R151	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R152	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R153	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R154	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R155	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R156	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R157	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R158	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R159	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R160	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R166	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R167	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R202	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R203	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R204	1-216-295-00	METAL CHIP	0	5%	1/10W	
R206	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R207	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R208	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R209	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R210	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R211	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R212	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R213	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R214	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R215	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R216	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R217	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R218	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R219	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R220	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R221	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R222	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R223	1-216-295-00	METAL CHIP	0	5%	1/10W	
R224	1-216-295-00	METAL CHIP	0	5%	1/10W	
R228	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R229	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R231	1-216-295-00	METAL CHIP	0	5%	1/10W	
R232	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R234	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R235	1-216-025-00	METAL CHIP	100	5%	1/10W	
R236	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R237	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R238	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R239	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R240	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R241	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R242	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R243	1-216-295-00	METAL CHIP	0	5%	1/10W	
R246	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R247	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R248	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R249	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R250	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R251	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R501	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R502	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R503	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R504	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R506	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R507	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R508	1-216-033-00	METAL CHIP	220	5%	1/10W	
R509	1-216-129-00	METAL CHIP	2.2M	5%	1/10W	
R510	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R511	1-216-073-00	METAL CHIP	10K	5%	1/10W	

Ref. No.	Part No.	Description	Remark
R512	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R513	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R514	1-216-033-00	METAL CHIP 220 5% 1/10W	
R515	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R516	1-249-377-11	CARBON 0.47 5% 1/4W	F
R517	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R518	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R519	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R520	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R521	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R522	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R523	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R524	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R551	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< VARIABLE RESISTOR >	
RV501	1-230-867-11	RES, ADJ, METAL 1K	
RV502	1-230-867-11	RES, ADJ, METAL 1K	
		< SWITCH >	
SW101	1-570-289-11	SWITCH, SLIDE (IMAGE)	
		< CRYSTAL >	
X101	1-567-160-21	RESONATOR, CERAMIC	
X102	1-567-132-00	RESONATOR, CERAMIC (8.00MHz)	
X103	1-567-160-21	RESONATOR, CERAMIC	
X201	1-567-160-21	RESONATOR, CERAMIC	
X202	1-567-132-00	RESONATOR, CERAMIC (8.00MHz)	
X203	1-567-160-21	RESONATOR, CERAMIC	
X204	1-577-260-21	VIBRATOR, CERAMIC	

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* A-7071-389-A RC-45 BOARD, COMPLETE

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		< DIODE >	
D101	8-719-106-44	DIODE RD9.1M-B2	
D102	8-719-106-44	DIODE RD9.1M-B2	
D201	8-719-106-44	DIODE RD9.1M-B2	
D202	8-719-106-44	DIODE RD9.1M-B2	
D203	8-719-106-44	DIODE RD9.1M-B2	
		< JACK >	
J101	1-568-800-11	JACK, ULTRA SMALL (Ⓛ)	
J102	1-507-905-00	JACK, DC (DC IN)	
J201	1-568-800-11	JACK, ULTRA SMALL (Ⓛ)	
J202	1-563-935-31	JACK, STEREO HEADPHONE (CONTROL S)	
J203	1-563-935-31	JACK, STEREO HEADPHONE (GP1 OUT)	

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	
R101	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R102	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R103	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R201	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R202	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R203	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R204	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R205	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R206	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R207	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R209	1-216-089-00	METAL CHIP 47K 5% 1/10W	
		< SWITCH >	
SW101	1-571-842-11	SWITCH, SLIDE (SHUTTLE MODE)	
SW102	1-571-842-11	SWITCH, SLIDE (MOVE MODE)	
SW103	1-571-842-11	SWITCH, SLIDE (END MODE)	
SW202	1-571-842-11	SWITCH, SLIDE (SHUTTLE MODE)	
SW203	1-571-841-11	SWITCH, SLIDE (COMMAND MODE)	
SW204	1-571-842-11	SWITCH, SLIDE (COMMAND MODE)	
SW205	1-571-841-11	SWITCH, SLIDE (PAUSE MODE)	

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* A-7071-390-A SW-172 BOARD, COMPLETE

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		< CAPACITOR >	
C301	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C302	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C303	1-124-763-00	ELECT 10000uF 20% 10V	
		< SWITCH >	
S301	1-571-843-11	SWITCH, SEESAW (POWER)	
		< COIL >	
T301	1-424-506-11	COIL, LINE FILTER	

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Ref. No.	Part No.	Description			Remark
	* A-7061-514-A	VI-60 BOARD, COMPLETE			
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		< CAPACITOR >			
C001	1-124-907-11	ELECT	10uF	20%	50V
C002	1-124-907-11	ELECT	10uF	20%	50V
C003	1-124-907-11	ELECT	10uF	20%	50V
C004	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C005	1-124-907-11	ELECT	10uF	20%	50V
C006	1-124-907-11	ELECT	10uF	20%	50V
C007	1-124-907-11	ELECT	10uF	20%	50V
C008	1-124-907-11	ELECT	10uF	20%	50V
C009	1-124-518-11	ELECT	470uF	20%	6.3V
C010	1-124-907-11	ELECT	10uF	20%	50V
C011	1-124-907-11	ELECT	10uF	20%	50V
C012	1-124-907-11	ELECT	10uF	20%	50V
C013	1-124-925-11	ELECT	2.2uF	20%	100V
C014	1-124-907-11	ELECT	10uF	20%	50V
C015	1-124-907-11	ELECT	10uF	20%	50V
C016	1-124-907-11	ELECT	10uF	20%	50V
C017	1-124-443-00	ELECT	100uF	20%	10V
C018	1-124-907-11	ELECT	10uF	20%	50V
C019	1-124-907-11	ELECT	10uF	20%	50V
C020	1-124-443-00	ELECT	100uF	20%	10V
C021	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C022	1-124-518-11	ELECT	470uF	20%	6.3V
C023	1-124-907-11	ELECT	10uF	20%	50V
C024	1-124-907-11	ELECT	10uF	20%	50V
C025	1-124-903-11	ELECT	1uF	20%	50V
C026	1-124-907-11	ELECT	10uF	20%	50V
C027	1-124-907-11	ELECT	10uF	20%	50V
C028	1-124-907-11	ELECT	10uF	20%	50V
C029	1-124-907-11	ELECT	10uF	20%	50V
C030	1-124-907-11	ELECT	10uF	20%	50V
C031	1-124-907-11	ELECT	10uF	20%	50V
C032	1-124-907-11	ELECT	10uF	20%	50V
C033	1-124-902-00	ELECT	0.47uF	20%	50V
C034	1-124-903-11	ELECT	1uF	20%	50V
C035	1-124-903-11	ELECT	1uF	20%	50V
C036	1-124-907-11	ELECT	10uF	20%	50V
C037	1-135-148-21	TANTAL. CHIP	1.5uF	10%	10V
C038	1-124-126-00	ELECT	47uF	20%	10V
C039	1-124-907-11	ELECT	10uF	20%	50V
C040	1-124-907-11	ELECT	10uF	20%	50V
C041	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C042	1-124-903-11	ELECT	1uF	20%	50V
C043	1-124-907-11	ELECT	10uF	20%	50V
C044	1-124-907-11	ELECT	10uF	20%	50V
C045	1-124-126-00	ELECT	47uF	20%	10V
C046	1-124-925-11	ELECT	2.2uF	20%	100V
C047	1-124-907-11	ELECT	10uF	20%	50V
C048	1-124-907-11	ELECT	10uF	20%	50V
C049	1-124-902-00	ELECT	0.47uF	20%	50V
C050	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C051	1-124-907-11	ELECT	10uF	20%	50V
C052	1-124-907-11	ELECT	10uF	20%	50V
C053	1-124-907-11	ELECT	10uF	20%	50V
C054	1-124-907-11	ELECT	10uF	20%	50V
C055	1-124-907-11	ELECT	10uF	20%	50V
C056	1-124-902-00	ELECT	0.47uF	20%	50V
C057	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C058	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C059	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C060	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C061	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C062	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C063	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C064	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C065	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C066	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C067	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C068	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C069	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C070	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C071	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C072	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C073	1-130-468-00	MYLAR	560PF	5%	50V
C074	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C075	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C076	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C077	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C078	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C079	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C080	1-130-475-00	MYLAR	0.0022uF	5%	50V
C081	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C082	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C083	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C084	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C085	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C086	1-130-489-00	MYLAR	0.033uF	5%	50V
C087	1-130-489-00	MYLAR	0.033uF	5%	50V
C088	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C089	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C090	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C091	1-130-487-00	MYLAR	0.022uF	5%	50V
C092	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C093	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C094	1-130-471-00	MYLAR	0.001uF	5%	50V

Ref. No.	Part No.	Description			Remark
C095	1-130-487-00	MYLAR	0.022uF	5%	50V
C096	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C097	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C098	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C099	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C100	1-124-907-11	ELECT	10uF	20%	50V
C101	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C103	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C104	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C105	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C106	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C107	1-130-483-00	MYLAR	0.01uF	5%	50V
C108	1-130-471-00	MYLAR	0.001uF	5%	50V
C109	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C111	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C112	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C113	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C114	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C115	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C116	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C117	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C118	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C120	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C121	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C122	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C123	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C124	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C125	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C126	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C127	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C128	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C129	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C130	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C131	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C132	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C133	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C134	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C135	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C136	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C137	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C138	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C139	1-130-483-00	MYLAR	0.01uF	5%	50V
C140	1-130-471-00	MYLAR	0.001uF	5%	50V
C141	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C142	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C143	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C144	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C145	1-163-035-00	CERAMIC CHIP	0.047uF		50V

Ref. No.	Part No.	Description			Remark
C146	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C147	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C148	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C149	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C150	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C151	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C152	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C153	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C154	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C155	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C156	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C157	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C159	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C160	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C161	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C162	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C163	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C164	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C165	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C166	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C167	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C168	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C169	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C171	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C174	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C175	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C176	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C177	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C178	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C179	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C181	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C182	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C183	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C196	1-163-251-11	CERAMIC CHIP	100PF	5%	50V

< CONNECTOR >

CNJ001	1-566-980-21	CONNECTOR, ROUND TYPE 4P
CNJ002	1-566-980-21	CONNECTOR, ROUND TYPE 4P
CNJ003	1-568-216-11	JACK, PIN 3P
CNJ004	1-568-216-11	JACK, PIN 3P

< TRIMMER >

CV001	1-141-311-11	CAP, TRIMMER	20PF
CV002	1-141-311-11	CAP, TRIMMER	20PF
CV003	1-141-311-11	CAP, TRIMMER	20PF

< DIODE >

Ref. No.	Part No.	Description	Remark
D001	8-719-104-34	DIODE 1S2836	
D002	8-719-104-34	DIODE 1S2836	
D003	8-719-104-34	DIODE 1S2836	
D004	8-719-104-34	DIODE 1S2836	
D005	8-719-104-34	DIODE 1S2836	
D006	8-719-104-34	DIODE 1S2836	
D007	8-719-949-57	DIODE 1T32-4	
D008	8-719-104-34	DIODE 1S2836	
D009	8-719-104-34	DIODE 1S2836	
D010	8-719-104-34	DIODE 1S2836	
D011	8-719-104-34	DIODE 1S2836	
D012	8-719-104-34	DIODE 1S2836	
D013	8-719-104-34	DIODE 1S2836	
D014	8-719-104-34	DIODE 1S2836	
D016	8-719-104-34	DIODE 1S2836	
D018	8-719-104-34	DIODE 1S2836	
D019	8-719-104-34	DIODE 1S2836	

< IC >

Ref. No.	Part No.	Description	Remark
IC201	8-759-208-11	IC MC14053BF	
IC202	8-759-208-11	IC MC14053BF	
IC203	8-759-105-49	IC uPC319G2	
IC204	8-759-100-97	IC uPC339G2	
IC205	8-759-618-48	IC M51848L	
IC206	8-759-233-64	IC TC74HCU04AF	
IC207	8-752-332-67	IC CXD1217M	
IC208	8-759-032-01	IC MC74HC00AF	
IC209	8-759-100-96	IC uPC4558G2	
IC210	8-759-239-55	IC MC74HC123AF	
IC211	8-759-208-11	IC MC14053BF	
IC212	8-759-908-17	IC TL082CPS	
IC213	8-759-030-55	IC MC1496M	
IC214	8-759-030-55	IC MC1496M	
IC215	8-759-631-08	IC M51279FP	
IC216	8-752-033-58	IC V7040	
IC217	8-759-030-55	IC MC1496M	
IC501	8-752-325-32	IC CXK58257P-10L	
IC502	8-759-983-52	IC MB87484	
IC503	8-759-232-32	IC TC74HC74AF	
IC504	8-759-631-24	IC M50455-105FP	
IC505	8-759-926-18	IC SN74HC157NS	
IC506	8-759-925-72	IC SN74HC02NS	
IC507	8-759-925-74	IC SN74HC04NS	
IC508	8-759-100-96	IC uPC4558G2	
IC509	8-759-239-55	IC MC74HC123AF	

< JUMPER WIRE >

Ref. No.	Part No.	Description	Remark
JW001	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW004	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW005	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW007	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW010	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW012	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW013	1-216-295-00	METAL CHIP 0 5% 1/10W	

< COIL >

Ref. No.	Part No.	Description	Remark
L001	1-410-324-11	INDUCTOR 4.7uH	
L002	1-410-521-11	INDUCTOR 100uH	
L003	1-410-324-11	INDUCTOR 4.7uH	
L004	1-410-517-11	INDUCTOR 47uH	
L005	1-410-363-11	INDUCTOR 27uH	
L006	1-410-517-11	INDUCTOR 47uH	
L007	1-410-324-11	INDUCTOR 4.7uH	
L008	1-410-521-11	INDUCTOR 100uH	
L009	1-410-502-11	INDUCTOR 2.7uH	
L010	1-410-363-11	INDUCTOR 27uH	
L011	1-408-779-31	INDUCTOR, CHIP 15uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-230-49	TRANSISTOR 2SC2712-G	
Q002	8-729-230-49	TRANSISTOR 2SC2712-G	
Q003	8-729-230-49	TRANSISTOR 2SC2712-G	
Q004	8-729-230-49	TRANSISTOR 2SC2712-G	
Q005	8-729-230-49	TRANSISTOR 2SC2712-G	
Q006	8-729-230-49	TRANSISTOR 2SC2712-G	
Q007	8-729-230-49	TRANSISTOR 2SC2712-G	
Q008	8-729-230-49	TRANSISTOR 2SC2712-G	
Q009	8-729-216-22	TRANSISTOR 2SA1162	
Q010	8-729-216-22	TRANSISTOR 2SA1162	
Q011	8-729-230-49	TRANSISTOR 2SC2712-G	
Q012	8-729-230-49	TRANSISTOR 2SC2712-G	
Q013	8-729-230-49	TRANSISTOR 2SC2712-G	
Q014	8-729-230-49	TRANSISTOR 2SC2712-G	
Q015	8-729-216-22	TRANSISTOR 2SA1162	
Q016	8-729-216-22	TRANSISTOR 2SA1162	
Q017	8-729-230-49	TRANSISTOR 2SC2712-G	
Q018	8-729-216-22	TRANSISTOR 2SA1162	
Q019	8-729-230-49	TRANSISTOR 2SC2712-G	
Q020	8-729-230-49	TRANSISTOR 2SC2712-G	
Q021	8-729-901-01	TRANSISTOR DTC144EK	
Q022	8-729-230-49	TRANSISTOR 2SC2712-G	
Q023	8-729-230-49	TRANSISTOR 2SC2712-G	
Q024	8-729-230-49	TRANSISTOR 2SC2712-G	
Q025	8-729-230-49	TRANSISTOR 2SC2712-G	

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Ref.No.	Part No.	Description		Remark
Q026	8-729-230-49	TRANSISTOR	2SC2712-G	
Q027	8-729-230-49	TRANSISTOR	2SC2712-G	
Q028	8-729-230-49	TRANSISTOR	2SC2712-G	
Q029	8-729-216-22	TRANSISTOR	2SA1162	
Q030	8-729-230-49	TRANSISTOR	2SC2712-G	
Q031	8-729-901-01	TRANSISTOR	DTC144EK	
Q032	8-729-266-93	TRANSISTOR	2SC2669	
Q033	8-729-230-49	TRANSISTOR	2SC2712-G	
Q034	8-729-216-22	TRANSISTOR	2SA1162	
Q035	8-729-216-22	TRANSISTOR	2SA1162	
Q036	8-729-900-98	TRANSISTOR	DTC143TK	
Q037	8-729-216-22	TRANSISTOR	2SA1162	
Q038	8-729-230-49	TRANSISTOR	2SC2712-G	
Q039	8-729-230-49	TRANSISTOR	2SC2712-G	
Q040	8-729-230-49	TRANSISTOR	2SC2712-G	
Q041	8-729-216-22	TRANSISTOR	2SA1162	
Q042	8-729-230-49	TRANSISTOR	2SC2712-G	
Q043	8-729-216-22	TRANSISTOR	2SA1162	
Q044	8-729-230-49	TRANSISTOR	2SC2712-G	
Q045	8-729-230-49	TRANSISTOR	2SC2712-G	
Q046	8-729-230-49	TRANSISTOR	2SC2712-G	
Q047	8-729-230-49	TRANSISTOR	2SC2712-G	
Q048	8-729-216-22	TRANSISTOR	2SA1162	
Q049	8-729-230-49	TRANSISTOR	2SC2712-G	
Q050	8-729-901-01	TRANSISTOR	DTC144EK	
Q051	8-729-230-49	TRANSISTOR	2SC2712-G	
Q052	8-729-230-49	TRANSISTOR	2SC2712-G	
Q053	8-729-116-05	TRANSISTOR	2SK160-K5	
Q054	8-729-110-92	TRANSISTOR	2SK425-X13	
Q055	8-729-230-49	TRANSISTOR	2SC2712-G	

< RESISTOR >

Ref.No.	Part No.	Description				Remark
R003	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R004	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R005	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R006	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R008	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R009	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R010	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R011	1-216-041-00	METAL CHIP	470	5%	1/10W	
R012	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R013	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R014	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R015	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R016	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R017	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R018	1-216-041-00	METAL CHIP	470	5%	1/10W	
R019	1-216-041-00	METAL CHIP	470	5%	1/10W	
R020	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R021	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R022	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R023	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R024	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R025	1-216-039-00	METAL CHIP	390	5%	1/10W	
R026	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R027	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R028	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R029	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R030	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R034	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R035	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R036	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R037	1-216-035-00	METAL CHIP	270	5%	1/10W	
R039	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R040	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R041	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R042	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R043	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R046	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R048	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R049	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R050	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R052	1-216-025-00	METAL CHIP	100	5%	1/10W	
R053	1-216-025-00	METAL CHIP	100	5%	1/10W	
R054	1-216-022-00	METAL CHIP	75	5%	1/10W	
R055	1-216-022-00	METAL CHIP	75	5%	1/10W	
R057	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R058	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R059	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R060	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R061	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R062	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R063	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R064	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R065	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R066	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R067	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R068	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R069	1-216-025-00	METAL CHIP	100	5%	1/10W	
R070	1-216-022-00	METAL CHIP	75	5%	1/10W	
R072	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R073	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R074	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R075	1-216-041-00	METAL CHIP	470	5%	1/10W	
R076	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R077	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R078	1-216-025-00	METAL CHIP	100	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R079	1-216-025-00	METAL CHIP	100	5%	1/10W	
R080	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R081	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R082	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R083	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R084	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R085	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R086	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R087	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R088	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R089	1-216-748-11	METAL CHIP	39K	5%	1/10W	
R090	1-216-037-00	METAL CHIP	330	5%	1/10W	
R091	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R092	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R093	1-216-025-00	METAL CHIP	100	5%	1/10W	
R094	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R095	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R096	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R097	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R098	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R099	1-216-029-00	METAL CHIP	150	5%	1/10W	
R100	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R101	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R102	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R103	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R104	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R105	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R106	1-216-048-00	METAL CHIP	910	5%	1/10W	
R107	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R108	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R109	1-216-041-00	METAL CHIP	470	5%	1/10W	
R110	1-216-041-00	METAL CHIP	470	5%	1/10W	
R111	1-216-041-00	METAL CHIP	470	5%	1/10W	
R112	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R113	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R114	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R115	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R118	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R119	1-216-041-00	METAL CHIP	470	5%	1/10W	
R120	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R122	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R124	1-216-309-00	METAL CHIP	5.6	5%	1/10W	
R125	1-216-309-00	METAL CHIP	5.6	5%	1/10W	
R126	1-216-022-00	METAL CHIP	75	5%	1/10W	
R127	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R128	1-216-039-00	METAL CHIP	390	5%	1/10W	
R129	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R130	1-216-025-00	METAL CHIP	100	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R131	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R132	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R133	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R134	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R135	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R136	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R139	1-216-041-00	METAL CHIP	470	5%	1/10W	
R140	1-216-039-00	METAL CHIP	390	5%	1/10W	
R141	1-216-039-00	METAL CHIP	390	5%	1/10W	
R142	1-216-041-00	METAL CHIP	470	5%	1/10W	
R143	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R144	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R145	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R146	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R148	1-216-039-00	METAL CHIP	390	5%	1/10W	
R149	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R150	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R151	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R152	1-216-295-00	METAL CHIP	0	5%	1/10W	
R153	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R154	1-216-029-00	METAL CHIP	150	5%	1/10W	
R155	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R156	1-216-041-00	METAL CHIP	470	5%	1/10W	
R157	1-216-029-00	METAL CHIP	150	5%	1/10W	
R158	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R159	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R160	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R161	1-216-039-00	METAL CHIP	390	5%	1/10W	
R162	1-216-039-00	METAL CHIP	390	5%	1/10W	
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R164	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R165	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R166	1-216-041-00	METAL CHIP	470	5%	1/10W	
R167	1-216-043-00	METAL CHIP	560	5%	1/10W	
R168	1-216-043-00	METAL CHIP	560	5%	1/10W	
R169	1-216-043-00	METAL CHIP	560	5%	1/10W	
R170	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R171	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R172	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R173	1-216-022-00	METAL CHIP	75	5%	1/10W	
R174	1-216-309-00	METAL CHIP	5.6	5%	1/10W	
R175	1-216-309-00	METAL CHIP	5.6	5%	1/10W	
R176	1-216-037-00	METAL CHIP	330	5%	1/10W	
R177	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R178	1-216-041-00	METAL CHIP	470	5%	1/10W	
R179	1-216-048-00	METAL CHIP	910	5%	1/10W	
R180	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R181	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R182	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R183	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R184	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R185	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R186	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R187	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R188	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R189	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R190	1-216-029-00	METAL CHIP	150	5%	1/10W	
R192	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R193	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R194	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R196	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R197	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R198	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R199	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R200	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R201	1-216-021-00	METAL CHIP	68	5%	1/10W	
R202	1-216-029-00	METAL CHIP	150	5%	1/10W	
R203	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R204	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R205	1-216-339-11	METAL GLAZE	18K	1%	1/10W	
R206	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R207	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R209	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R210	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R211	1-216-039-00	METAL CHIP	390	5%	1/10W	
R212	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R213	1-216-047-00	METAL CHIP	820	5%	1/10W	
R214	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R215	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R217	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R218	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R219	1-216-041-00	METAL CHIP	470	5%	1/10W	
R220	1-216-041-00	METAL CHIP	470	5%	1/10W	
R221	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R222	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R223	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R224	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R225	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R226	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R227	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R228	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV001	1-230-866-11	RES, ADJ, METAL 470	
RV002	1-230-866-11	RES, ADJ, METAL 470	
RV003	1-230-866-11	RES, ADJ, METAL 470	
RV004	1-230-866-11	RES, ADJ, METAL 470	
RV005	1-230-868-11	RES, ADJ, METAL 2.2K	
RV006	1-230-867-11	RES, ADJ, METAL 1K	
RV007	1-230-867-11	RES, ADJ, METAL 1K	
RV008	1-230-871-11	RES, ADJ, METAL 22K	
RV010	1-230-873-11	RES, ADJ, METAL 47K	
RV011	1-230-867-11	RES, ADJ, METAL 1K	

< CRYSTAL >

Ref. No.	Part No.	Description	Remark
X001	1-527-723-00	VIBRATOR, CRYSTAL	
X002	1-567-344-21	VIBRATOR, CRYSTAL (VCO)	

****

MISCELLANEOUS

****

Ref. No.	Part No.	Description	Remark
	1-574-316-11	CORD, CONNECTION (CONTROL L)	
	1-574-496-11	CORD, CONNECTION (CONTROL S/GP1)	
	1-590-796-21	CORD, CONNECTION (CONTROL L CABLE ADAPTOR)	
JG101	1-572-711-11	SWITCH, ROTARY (ENCODER) (PLAYER)	
JG102	1-572-711-11	SWITCH, ROTARY (ENCODER) (RECORDER)	

****

ACCESSORY & PACKING MATERIAL

****

Ref. No.	Part No.	Description	Remark
*	2-131-254-31	INDIVIDUAL CARTON	
*	2-135-416-01	CUSHION (C)	
*	2-135-436-01	CUSHION (LEFT)	
*	2-135-437-01	CUSHION (RIGHT)	
	2-135-453-01	SPACER	
	2-273-319-01	SHEET, PROTECTION	
	3-753-024-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH)	
	3-753-024-41	MANUAL, INSTRUCTION (GERMAN/DUTCH/SWEDISH)	(AEP)
	3-753-024-61	MANUAL, INSTRUCTION (SPANISH/ITALIAN/PORTUGUESE)	(AEP)
	3-753-236-11	MANUAL, INSTRUCTION (Timing Adjustment) (ENGLISH/FRENCH)	
	3-753-236-41	MANUAL, INSTRUCTION (Timing Adjustment) (SPANISH/PORTUGUESE/ITALIAN/GERMAN/DUTCH/SWEDISH)	(AEP)
*	4-030-082-01	BAG (1), AIR CAP	

****

HARDWARE LIST

****

Ref. No.	Part No.	Description	Remark
# 1	7-685-645-79	SCREW +P 3X6 TYPE2 NON-SLIT	
# 2	7-685-205-19	SCREW +KTP 2X8 TYPE2 NON-SLIT	
# 3	7-685-132-19	SCREW +BTP 2.6X5 TYPE2 N-S	
# 4	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
# 5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
# 6	7-623-308-07	LW 3, TYPE (A)	

****

SECTION 7
ELECTRICAL ADJUSTMENTS

During the Adjustment, See the Parts location diagram relevant to the adjustment on page 107.

The following measuring instruments are needed in electrical adjustment.

[Using instruments]

1) Monitor TV
2) Oscilloscope dual-trace, Band width more than 10MHz with delay mode (Use a probe of 10 : 1, unless otherwise specified.)
3) Frequency counter
4) PAL pattern generator with video output terminal and Y/C separate output terminal
5) Digital voltmeter
6) PAL vectorscope

[Connection]

Unless otherwise specified, connect the measuring instruments as shown in the following diagram.

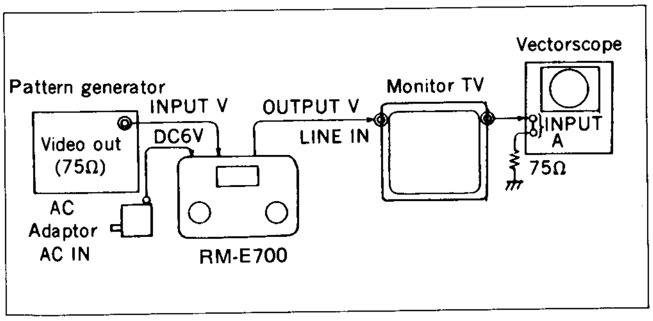

Vectorscope
Pattern generator
Monitor TV
INPUT V
OUTPUT V
Video out
(75Ω)
DC6V
LINE IN
INPUT
A
75Ω
AC
Adaptor
AC IN
RM-E700

Fig. 7-1.

[Color ber signal]

Video signals output by a pattern generator are used as adjustment signals when making the electrical adjustments, and these Video output signals should be within the required Standard. Connect an oscilloscope CNJ3 (INPUT V) on the VI-60 board. Check that the amplitudes of Video signal SYNC signals, picture portions, and burst signals are flat at approximatery 0.3, 0.7, and 0.3V, respectively, and that the level ratio of burst signal and "red" signal is 0.30 : 0.66. Fig. 7-2. shows Video signals (color bars) used in making the electrical adjustment.

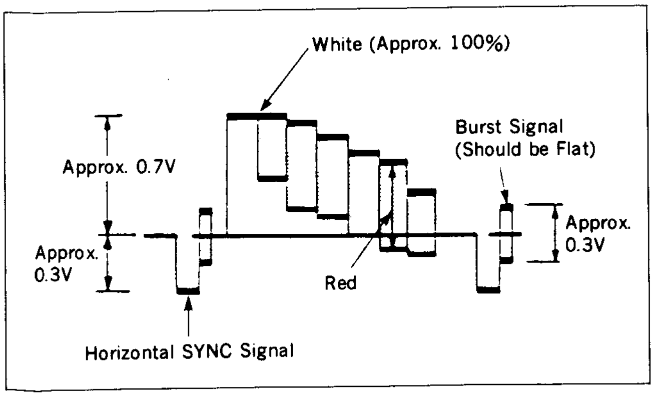

White (Approx. 100%)
Burst Signal
(Should be Flat)
Approx. 0.7V
Approx.
0.3V
Approx.
0.3V
Red
Horizontal SYNC Signal

Fig. 7-2.

[Specified input/output level and impedance]

Video input	Phono jack (1) 1Vp-p, 75ohms, unbalanced, sync negative
S Video input	4-pin mini-DIN (1) Luminance signal : 1Vp-p, 75ohms, unbalanced, sync negative Chrominance signal : 0.300Vp-p 75ohms, unbelanced
Video output	Phono jack (1) 1Vp-p, 75ohms, unbalanced, sync negative
S Video output	4-pin mini-DIN (1) Luminance signal : 1Vp-p, 75ohms, unbalanced, sync negative Chrominance signal : 0.300Vp-p 75ohms, unbelanced

[Adjusting mode]

Unless otherwise specified, E-E mode.

7-1. POWER SUPPLY SECTION ADJUSTMENT (MC-67 BOARD)

Adjustment and confirmation are made with the power supply ON.

Signal	Arbitrary
Measuring instrument	Digital voltmeter
Ever 5V check	
Measurement point	Pin ③ of IC501
Specified value	5.0±0.2Vdc
Digital 5V adjustment	
Measurement point	TP501 (Collector of Q506)
Adjusting element	RV501
Specified value	5.0±0.2Vdc
Digital−5V adjustment	
Measurement point	TP502 (Pin ② of CN201)
Adjusting element	RV502
Specified value	−5.0±0.2Vdc

[Checking method]

1) Confirm that the voltage of the pin ③ of IC501 is 5.0±0.2 V dc.

[Adjusting method]

1) Adjust with RV501 so that the voltage at the TP501 is 5.0±0.2 V dc.
2) Adjust with RV502 so that the voltage at the TP502 is -5. 0±0.2 V dc.

7-2. VIDEO SECTION ADJUSTMENT

7-2-1. 4fsc Adjustment (VI-60 Board)

Signal	None
Measurement point	TP 3 (Collector of Q 26)
Measuring instrument	Frequency counter
Adjusting element	CV 3
Specified value	4433619±10Hz

[Adjusting method]

1) Adjust to 4433619±10Hz with CV 3.

7-2-2. CLK Adjustment (VI-60 Board)

Signal	None
Measurement point	Pin㉔ of IC 207
Measuring instrument	Oscilloscope
Adjusting element	CV 1
Specified value	2.5±0.3Vdc

[Adjusting method]

1) Adjust to 2.5± 0.3 Vdc with CV1.

7-2-3. PLL Adjustment (VI-60 Board)

Signal	Color bar
Measurement point	TP 7 (Pin ① of IC 209)
Measuring instrument	Oscilloscope
Adjusting element	CV 2
Specified value	2.5±0.2Vdc

[Adjusting method]

1) Adjust to 2.5±0.2Vdc with CV2.

7-2-4. SYNC Generator Phase Adjustment (VI-60 Board)

Signal	Color bar
Measurement point	CH 1 : CNJ 3 VIDEO IN CH 2 : TP 5 (Pin ④ of IC 207)
Measuring instrument	Oscilloscope
Adjusting element	RV 8
Specified value	t=0±50nsec.

[Adjusting method]

1) Adjust to 0±50 nsec. with RV8.

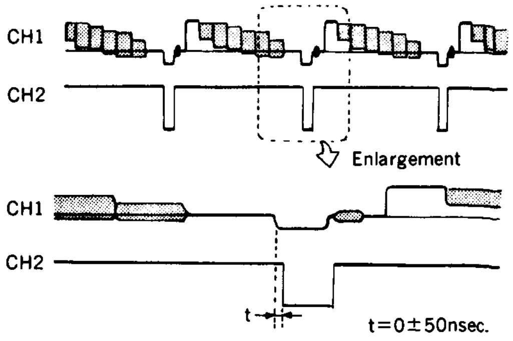


Fig. 7-3.

7-2-5. Character Generator Clock Timing Adjustment (VI-60 Board)

Signal	Color bar
Measurement point	CH 1 : TP 12 (Pin ③ of IC 503) CH 2 : TP 13 (Pin ⑬ of IC 509)
Measuring instrument	Oscilloscope
Adjusting element	RV 11
Specified value	t=0±10nsec.

[Adjusting method]

1) Adjust to 0±10nsec. with RV11.

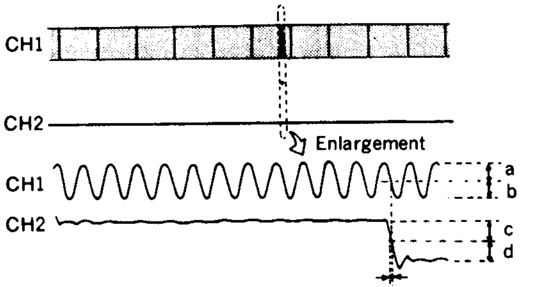


Fig. 7-4.

7-2-6. TINT Adjustment (VI-60 Board)

Signal	Color bar
Measurement point	TP 6 (Pin ① of IC 212)
Measuring instrument	Oscilloscope
Adjusting element	RV 10
Specified value	Less than −200mVdc

[Adjusting method]

1) Adjust to less than −200mVdc with RV 10.

7-2-7. Y Level Adjustment (VI-60 Board)

Signal	Color bar
Measurement point	TP 9 (CNJ 4 VIDEO OUT)
Measuring instrument	Oscilloscope
Adjusting element	RV 1
Specified value	1.0±0.1Vp-p

[Adjusting method]

1) Adjust to 1.0±0.1Vp-p with RV1.

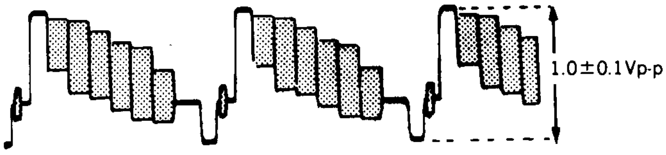


Fig. 7-5.

7-2-8. DC Balance (Y) Adjustment (VI-60 Board)

Mode	Superimpose
Signal	Color bar
Measurement point	TP 9 (CNJ 4 VIDEO OUT)
Measuring instrument	Oscilloscope
Adjusting element	RV 2
Specified value	ΔV=0±20mV

[Adjusting method]

1) Press the PAGE 1 button.
2) Press the IMAGE button so that the IMAGE indication is displayed is the display window.
3) Press the MEMORY button.
4) Set that the digital color is black with COLOR button.
5) Adjust to 0±20mV with RV2.
6) Press the CLEAR button.

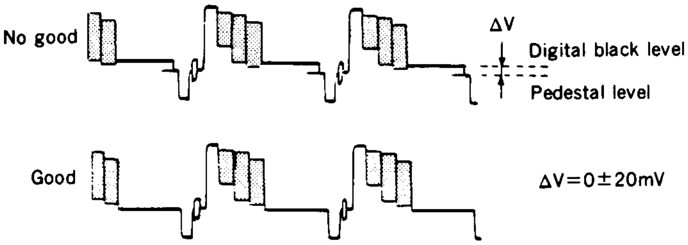


Fig. 7-6.

7-2-9. INT Burst Adjustment (VI-60 Board)

Mode	Superimpose
Signal	None
Measurement point	CNJ 4 VIDEO OUT
Measuring instrument	Vectorscope (NTSC mode)
Adjusting element	RV 4
Specified value	0±5%

[Adjusting method]

1) Press the PAGE 1 button.
2) Press the IMAGE button so that the IMAGE indication is displayed in the display window.
3) Press the MEMORY button.
4) Set the digital color is yellow with color button.
5) Adjust RV4 so that the burst luminescent spot is burst specified level 0±5% at the vectorscope.
6) Confirm that the yellow luminescent spot within the yellow reproductivity frame ( ) at the vectorscope.
7) Press the CLEAR button.

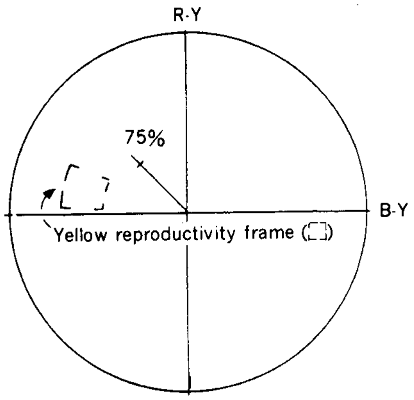


Fig. 7-7.

7-2-10. EXT Chroma Level/Phase Adjustment (VI-60 Board)

Mode	Superimpose
Signal	Color bar
Measurement point	CNJ 4 VIDEO OUT
Measuring instrument	Vectorscope (NTSC mode)
Adjusting element	RV 6 (LEVEL) RV 5 (PHASE)
Specified value	The yellow luminescent spot must be within the yellow reproductivity frame.

Note : On RV5 is not satisfied with phase adjustment, do all over agein the "7-2-6.TINT Adjustment" and later to do adjustment agein.

[Adjusting method]

1) Press the PAGE 1 button.
2) Press the IMAGE button so that the IMAGE indication is displayed in the display window.
3) Press the MEMORY button.
4) Set the digital color is yellow with COLOR button.
5) Adjust RV 6 and RV 5 so that the yellow luminescent spot with in the yellow reproductivity frame ( ) at the vectorscope.
6) Press the CLEAR button.

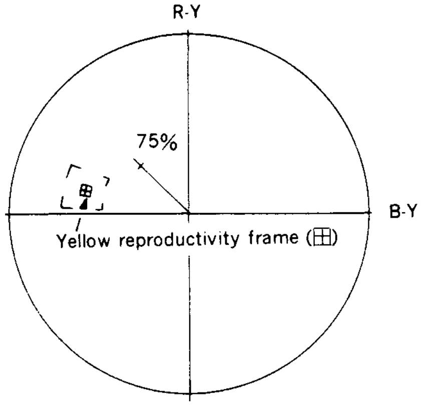


Fig. 7-8.

7-2-11. DC Balance (C) Adjustment (VI-60 Board)

Mode	Superimpose
Signal	Color bar and None
Measurement point	TP 10 (Pin⑫ of IC 213)
Measuring instrument	Oscilloscope
Adjusting element	RV 3
Specified value	ΔV=0±10mV

[Adjusting method]

1) Input the color bar signal.
2) Press the PAGE 1 button.
3) Press the IMAGE button so that the IMAGE indication is displayed in the display window.
4) Press the MEMORY button.
5) Set that the digital color is block with COLOR button.
6) The input signal should be no signal.
7) While pressing the internal switch of CNJ 2 S VIDEO OUT by a rod, make adjustment of 8).
8) Adjust with RV 3 so that the difference (ΔV) of TP 10 output waveform is 0±10mV.
9) Press the CLEAR button.

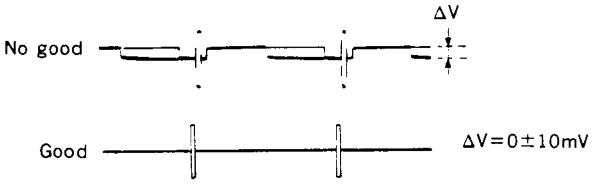

ΔV
No good
Good
ΔV=0±10mV

Fig. 7-9.

7-2-12. Chroma Level Adjustment (VI-60 Board)

Connect the measuring instruments as shown in the following diagram.

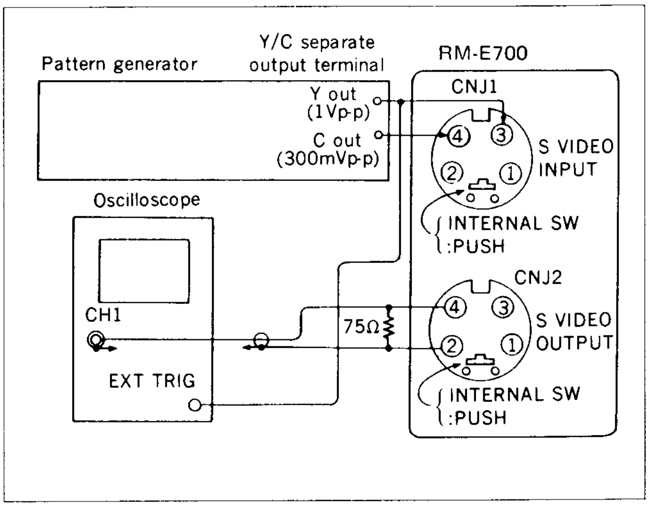

Pattern generator
Y/C separate output terminal
Y out (1Vp-p)
C out (300mVp-p)
RM-E700
CNJ1
④ ③
② ①
S VIDEO INPUT
INTERNAL SW :PUSH
CNJ2
S VIDEO OUTPUT
INTERNAL SW :PUSH
Oscilloscope
CH1
EXT TRIG
75Ω

Fig. 7-10.

Signal	Color bar (S VIDEO INPUT)
Measurement	Refer to the Fig. 7-10.
Measurement point	Refer to the Fig. 7-10.
Measuring instrument	Oscilloscope
Adjusting element	RV7
Specified value	300±30mVp-p

[Adjusting method]

1) Adjust RV7 so that the burst level is 300±30mVp-p.

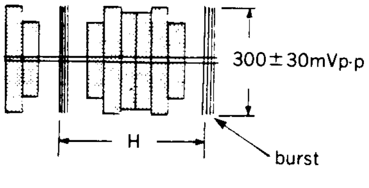
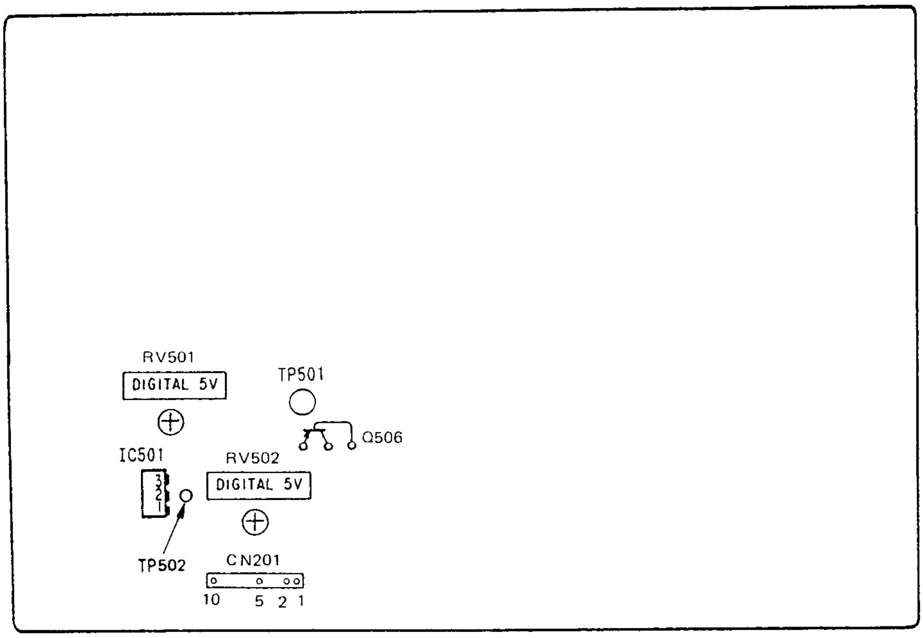

300±30mVp-p
H
burst

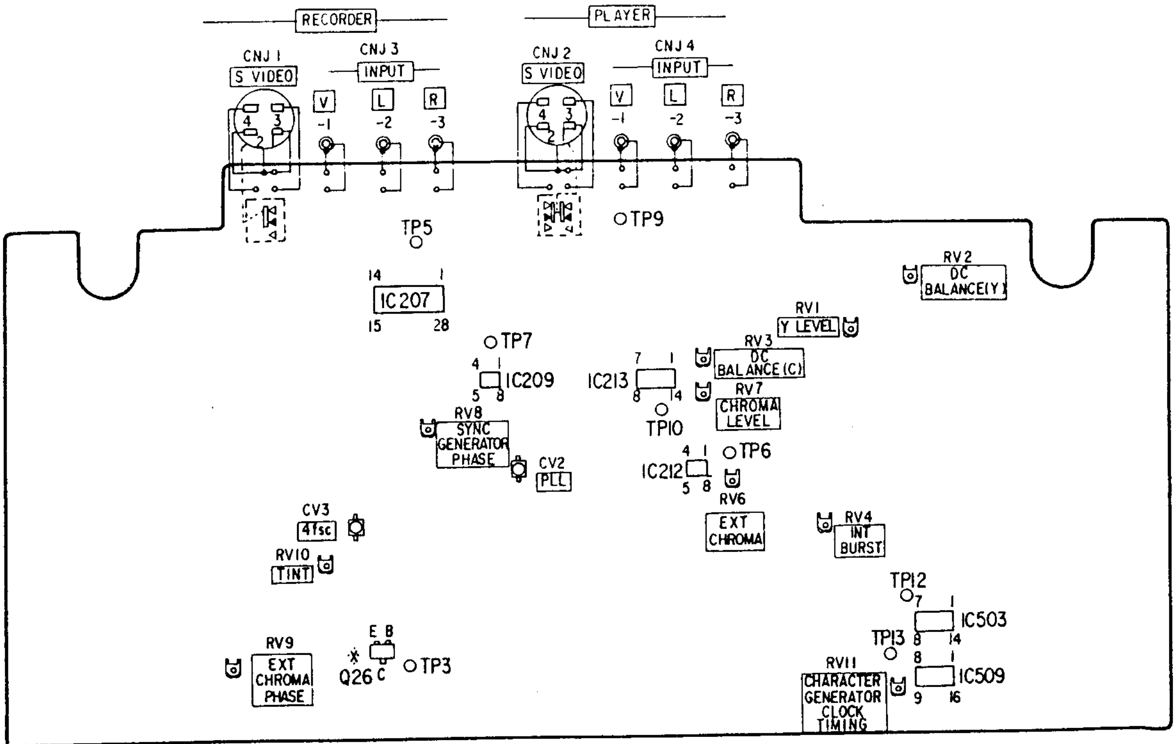
Fig. 7-11.

7-3 ADJUSTMENTS ELEMENTS LOCATION

MC-67 BOARD (COMPONENT SIDE)


RV501
DIGITAL 5V
TP501
Q506
IC501
RV502
DIGITAL 5V
3
2
1
TP502
CN201
10
5
2
1

VI-60 BOARD (COMPONENT SIDE)


RECORDER
PLAYER
CNJ 1
S VIDEO
CNJ 3
INPUT
V
L
R
-1
-2
-3
CNJ 2
S VIDEO
CNJ 4
INPUT
V
L
R
-1
-2
-3
TP5
TP9
RV2
DC BALANCE(Y)
IC207
14
1
15
28
RV1
Y LEVEL
TP7
RV3
DC BALANCE(C)
IC209
IC213
RV7
CHROMA LEVEL
RV8
SYNC GENERATOR PHASE
TP10
TP6
CV2
PLL
IC212
RV6
EXT CHROMA
RV4
INT BURST
CV3
4fsc
RV10
TINT
TP12
IC503
TP13
RV9
EXT CHROMA PHASE
E B
Q26 C
TP3
RV11
CHARACTER GENERATOR CLOCK TIMING
IC509

※: Indicates a adjustment element mounted on the conductor side.